
SPECIFICATION

FOR CONSTRUCTION CONTRACT

VA Project No. 695-11-117

Building 41: Repair Building Service & Roof Truss Stabilization

for:

VA Zablocki Medical Center

Milwaukee, Wisconsin



Volume 1: Division 0 – 28

Submittal: Final Construction Documents

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DEPARTMENT OF VETERANS AFFAIRS

CLEMENT J. ZABLOCKI MEDICAL CENTER, MILWAUKEE, WI

REPAIR BUILDING SERVICE & ROOF TRUSS STABILIZATION

CONSTRUCTION SPECIFICATIONS

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SECTION 00 01 15
LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of the contract.

<u>Drawing No.</u>	<u>Title</u>
<u>GENERAL INFORMATION/TITLE SHEETS</u>	
G001	TITLE SHEET, PROJECT INFORMATION, & SHEET INDEX
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G101	FIRST FLOOR LEVEL PLAN - EXISTING CONDITIONS
G102	MEZZANINE LEVEL PLAN - EXISTING CONDITIONS
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S400	TRUSS REPAIR DETAILS
S401	BEAM REPAIR
S402	DETAILS

- - - END - - -

SECTION 01 00 00
GENERAL REQUIREMENTS

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**SECTION 01 00 00
GENERAL REQUIREMENTS**

1.1 GENERAL INTENTION

- A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for **The Building 41 - Repair Building Service & Roof Truss Stabilization** as required by drawings and specifications.

Note: In the case of conflicts or discrepancies within or among the Contract Drawings or Specifications, the better quality, more stringent requirements or greater quantity of work, as determined by the Government, shall be provided.

- B. Pre-bid site visit for the surveying of existing site/building conditions of **Building 41** will be **available to** all potential bidders prior to the submitting of bids.

It is advised that this site visit that be attended by both the General Contractor and Shoring Contractor. Final Date and time for this site visit to be determined by the VA.

- C. With the initial response to the RFP the Contractor **shall** submit to the Contracting Officer the following in terms of **Statement of Qualifications:**
1. Contractor name and address.
 2. Sufficient information and project background history to demonstrate that the Contractor has the qualifications to meet the design requirements as shown and specified in the Bid Contract Documents.
 3. A list of previous construction projects, in which the Contractor has previously undertaken similar work as shown and specified in the Bid Contract Documents that demonstrates an expertise and working knowledge in the restorative nature of this work.

Note: Bids **will not** be accepted without providing the requested Statement of Qualifications as noted above.

- D. Offices of Chequamegon Bay Engineering, as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.

- E. Before placement and installation of work subject to tests by testing laboratory retained by Department of Veterans Affairs, the Contractor shall notify the Resident Engineer in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the Resident Engineer.
- F. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.
- G. Prior to commencing work, general contractor shall provide proof that a OSHA certified "competent person" (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.
- H. Training:
 - 1. The general contractor shall have the 30-hour OSHA certified Construction Safety course and or other relevant competency training, as determined by VA CP with input from the ICRA team. All subcontractors or other employees associated with the project shall have the 10-hours OSHA certified Safety Course.
 - 2. Submit training records of all such employees for approval before the start of work.

1.2 STATEMENT OF BID ITEM(S)

- A. Work includes general construction, alterations, and all other related work, including but not limited to all site roads, walkways, site grading, drainage, all mechanical and electrical work, utility systems, and all required removal of existing structures and construction as required for the completion of the work as noted in the Bid Documents & Construction Specifications.
- B. BID ALTERNATES - SEE BID SCHEDULE

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

- A. AFTER AWARD OF CONTRACT, 3 sets of specifications and drawings will be furnished, in form of CD ROMS.
- B. Additional sets of drawings may be made by the Contractor, at Contractor's expense, from reproducible sepia prints furnished by Issuing Office. Such sepia prints shall be returned to the Issuing Office immediately after printing is completed.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
3. No photography of VA premises is allowed without written permission of the Contracting Officer.
4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.

C. Guards:

1. Not Applicable

D. Key Control:

1. The General Contractor shall provide duplicate keys and lock combinations to the Resident Engineer for the purpose of security inspections of every area of project including tool boxes and parked machines and take any emergency action.
2. The General Contractor shall turn over all permanent lock cylinders to the VA locksmith for permanent installation. See Section 08 71 00, DOOR HARDWARE and coordinate.

E. Document Control:

1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".

2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
4. Certain documents, sketches, videos or photographs and drawings may be marked "Law Enforcement Sensitive" or "Sensitive Unclassified". Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Contracting Officer upon request.
5. These security documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.
6. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
7. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".
8. All electronic information shall be stored in specified location following VA standards and procedures using an Engineering Document Management Software (EDMS).
 - a. Security, access and maintenance of all project drawings, both scanned and electronic shall be performed and tracked through the EDMS system.
 - b. "Sensitive information" including drawings and other documents may be attached to e-mail provided all VA encryption procedures are followed.

F. Motor Vehicle Restrictions

1. Vehicle authorization request shall be required for any vehicle entering the site and such request shall be submitted 24 hours before the date and time of access. Access shall be restricted to picking up and dropping off materials and supplies.
2. Separate permits shall be issued for General Contractor and its employees for parking in designated areas only.

G. VA Security Badge Request Form

1. Prior to the beginning of any work, all awarded Contractors are required to complete the 'Security Badge Request Form,' and submit it to the VA for approval, in order to gain access to the Construction job site. See following page for the **"VA Standard Badge Request Form."**

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABLIZATION
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VA Security Badge Request Form

Request Contractor Badge for the following individual:

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABILIZATION
VA PROJECT: 695-11-117

Contractor Name:

Project Name:

Project No.:

Employee Name:

Access to Locations: Construction, Engineering, Warehouse, Loading Dock, OR,

Driver's License No.:

Vehicle License Plate No.:

Vehicle Mfg:

Model:

Color:

1.5 FIRE SAFETY

- A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
E84-2009.....Surface Burning Characteristics of Building
Materials
 2. National Fire Protection Association (NFPA):
10-2010.....Standard for Portable Fire Extinguishers
30-2008.....Flammable and Combustible Liquids Code
51B-2009.....Standard for Fire Prevention During Welding,
Cutting and Other Hot Work
70-2011.....National Electrical Code
241-2009.....Standard for Safeguarding Construction,
Alteration, and Demolition Operations
 3. Occupational Safety and Health Administration (OSHA):
29 CFR 1926.....Safety and Health Regulations for Construction
- B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Resident Engineer for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the Resident Engineer that individuals have undergone contractor's safety briefing.
- C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).
- E. Temporary Construction Partitions: NOT APPLICABLE
- F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Resident Engineer.

- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Resident Engineer.
- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- K. Standpipes: NOT APPLICABLE
- L. Sprinklers: NOT APPLICABLE
- M. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Resident Engineer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the Resident Engineer.
- N. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Resident Engineer.
- O. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Resident Engineer. Obtain permits from facility Safety Manager at least 48 hours in advance.
- P. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Resident Engineer and facility Safety Manager.
- Q. Smoking: Smoking is prohibited in and adjacent to construction areas inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited except in designated smoking rest areas.
- R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- S. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

- T. If required, submit documentation to the Resident Engineer that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.6 OPERATIONS AND STORAGE AREAS

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(FAR 52.236-10)

- D. Working space and space available for storing materials shall be determined by the Resident Engineer.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others.
1. Do not store materials and equipment in other than assigned areas.

2. Where access by Medical Center personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements and prior approval from the Resident Engineer.

G. Utilities Services: Where necessary to cut existing pipes, electrical wires, conduits, cables, etc., of utility services, or of fire protection systems or communications systems (except telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Resident Engineer. All such actions shall be coordinated with the Utility Company involved:

1. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

H. Phasing: NOT APPLICABLE

I. Construction Fence: Before construction operations begin, Contractor shall provide a chain link construction fence, 2.1m (seven feet) minimum height, around the construction area indicated on the drawings. Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by Resident Engineer.

J. When a building is turned over to Contractor, Contractor shall accept entire responsibility therefore.

1. Contractor shall maintain a minimum temperature of 4 degrees C (40 degrees F) at all times, except as otherwise specified.
2. Contractor shall maintain in operating condition existing fire protection and alarm equipment. In connection with fire alarm equipment, Contractor shall make arrangements for pre-inspection of site with Fire Department or Company (Department of Veterans Affairs or municipal) whichever will be required to respond to an alarm from Contractor's employee or watchman.

K. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone),

they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Resident Engineer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Resident Engineer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS for additional requirements.
 2. Contractor shall submit a request to interrupt any such services to Resident Engineer, in writing, 48 hours in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.
 3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
 4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Resident Engineer.
 5. In case of a contract construction emergency, service will be interrupted on approval of Resident Engineer. Such approval will be confirmed in writing as soon as practical.
 6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.
- L. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.

- M. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
 - 1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
 - 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the Resident Engineer.
- N. Coordinate the work for this contract with other construction operations as directed by Resident Engineer. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 ALTERATIONS

- A. Survey: Before any work is started, both the General Contractor & Shoring Contractor will be required to make a thorough survey of the existing conditions with both the Resident Engineer and members of the Design Team to survey and field verify the existing conditions in which alterations occur and areas which are anticipated routes of access. General Contractor shall furnish a report to the Contracting Officer. This report shall list by rooms and spaces:
 - 1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
 - 2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
 - 3. Shall note any discrepancies between drawings and existing conditions at site.
 - 4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Resident Engineer.
- B. Prior to the start of any work, the General Contractor shall provide and submit a preconstruction inspection and report to the Resident Engineer
 - 1. The Resident Engineer will review the report and any recommended changes.
 - 2. Proposed modifications or changes are not permitted without approval from the Resident Engineer.
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Resident Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a

report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:

1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.

- a. Damaged areas must be repaired to the greatest extent possible using authentic reclaimed materials to match existing.

- b. Any and all required replacement materials shall be submitted to the Resident Engineer for review and approval.

D. Protection: Provide the following protective measures:

1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

1.8 INFECTION PREVENTION MEASURES (NOT USED)

1.9 DISPOSAL AND RETENTION

A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:

1. Reserved items which are to remain property of the Government are noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by Resident Engineer.
2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor at no time shall modify or remove any existing trees or shrubs. All trees and shrubs in the area of potential impact shall have a perimeter fence installed at the existing drip line to protect the tree. There shall be no driving or parking of vehicles under existing drip lines and no storage of any materials shall be permitted under existing drip lines.
- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

- C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

1.11 RESTORATION

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Resident Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Resident Engineer before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed

as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.
- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

1.12 PHYSICAL DATA

- A. Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

- 1. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by:

Giles Engineering Associates, Inc.

N8 W22350 Johnson Drive, Suite A1
Waukesha, WI, 53816

(FAR 52.236-4)

- B. Subsurface conditions have been developed by core borings and test pits. Logs of subsurface exploration are shown diagrammatically on drawings.
- C. A copy of the soil report will be made available for inspection by bidders upon request to the Engineering Officer at the VA Medical Center, and shall be considered part of the contract documents.
- D. Government does not guarantee that other materials will not be encountered nor that proportions, conditions or character of several materials will not vary from those indicated by explorations. Bidders are expected to examine site of work and logs of borings; and, after investigation, decide for themselves character of materials and make their bids accordingly. Upon proper application to Department of Veterans Affairs, bidders will be permitted to make subsurface explorations of their own at site.

1.13 PROFESSIONAL SURVEYING SERVICES

A registered professional land surveyor or registered civil engineer whose services are retained and paid for by the Contractor shall perform services specified herein and in other specification sections. The Contractor shall certify that the land surveyor or civil engineer is not one who is a regular employee of the Contractor, and that the land surveyor or civil engineer has no financial interest in this contract.

1.14 LAYOUT OF WORK

- A. The Contractor shall lay out the work from Government established base lines and bench marks, indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at Contractor's own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through Contractor's negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(FAR 52.236-17)

- B. Establish and plainly mark center lines for each building and/or addition to each existing building, and such other lines and grades that are reasonably necessary to properly assure that location, orientation, and elevations established for each such structure are in accordance with lines and elevations shown on contract drawings.
- C. Whenever changes from contract drawings are made in line or grading requiring certificates, record such changes on a reproducible drawing bearing the registered land surveyor or registered civil engineer seal, and forward these drawings upon completion of work to Resident Engineer.
- D. The Contractor shall perform the surveying and layout work of this and other articles and specifications in accordance with the provisions of Article "Professional Surveying Services".

1.15 AS-BUILT DRAWINGS

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.

- B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Resident Engineer's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings to the Resident Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Resident Engineer.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.16 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Resident Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.
- B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.
- C. When certain buildings (or parts of certain buildings) are required to be completed in advance of general date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

1.17 RESIDENT ENGINEER'S FIELD OFFICE - NOT APPLICABLE

1.18 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:
 - 1. Permission to use each unit or system must be given by Resident Engineer. If the equipment is not installed and maintained in accordance with the following provisions, the Resident Engineer will withdraw permission for use of the equipment.
 - 2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded.

- The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
 4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
 5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
 6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government.
- B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.
- C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

1.19 TEMPORARY USE OF EXISTING ELEVATORS - NOT APPLICABLE

1.20 TEMPORARY USE OF NEW ELEVATORS - NOT APPLICABLE

1.21 TEMPORARY TOILETS - NOT APPLICABLE

1.22 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The amount to be paid by the Contractor for chargeable electrical services shall be the prevailing rates charged to the Government. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

- C. Contractor shall install meters at Contractor's expense and furnish the Medical Center a monthly record of the Contractor's usage of electricity as hereinafter specified.
- D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:
 - 1. Obtain heat by connecting to Medical Center heating distribution system.
 - a. Steam is available at no cost to Contractor.
- E. Electricity (for Construction and Testing): Furnish all temporary electric services.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.
- F. Water (for Construction and Testing): Furnish temporary water service.
 - 1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.
 - 2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Resident Engineer's discretion) of use of water from Medical Center's system.
- G. Steam: Furnish steam system for testing required in various sections of specifications.
 - 1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
 - 2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Resident Engineer's discretion), of use of steam from the Medical Center's system.
- H. Fuel: Natural and LP gas and burner fuel oil required for boiler cleaning, normal initial boiler-burner setup and adjusting, and for performing the specified boiler tests will be furnished by the Government. Fuel required for prolonged boiler-burner setup, adjustments, or modifications due to improper design or operation of

boiler, burner, or control devices shall be furnished by the Contractor at Contractor's expense.

1.23 NEW TELEPHONE EQUIPMENT - NOT APPLICABLE

1.24 TESTS - NOT APPLICABLE

1.25 INSTRUCTIONS - NOT APPLICABLE

1.26 GOVERNMENT-FURNISHED PROPERTY - NOT APPLICABLE

1.27 RELOCATED ITEMS - NOT APPLICABLE

1.28 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT - NOT APPLICABLE

1.29 CONSTRUCTION SIGN

- A. Provide a Construction Sign where directed by the Resident Engineer. All wood members shall be of framing lumber. Cover sign frame with 0.7 mm (24 gage) galvanized sheet steel nailed securely around edges and on all bearings. Provide three 100 by 100 mm (4 inch by 4 inch) posts (or equivalent round posts) set 1200 mm (four feet) into ground. Set bottom of sign level at 900 mm (three feet) above ground and secure to posts with through bolts. Make posts full height of sign. Brace posts with 50 x 100 mm (two by four inch) material as directed.
- B. Paint all surfaces of sign and posts two coats of white gloss paint. Border and letters shall be of black gloss paint, except project title which shall be blue gloss paint.
- C. Maintain sign and remove it when directed by the Resident Engineer.
- D. Detail Drawing of construction sign showing required legend and other characteristics of sign to be provided by COTR.
- E. Construction Sign shall not be permitted to be affixed to any portion of the existing building construction. Construction Signage shall be free-standing and totally independent of the existing Building construction.

1.30 SAFETY SIGN

- A. Provide a Safety Sign where directed by Resident Engineer. Face of sign shall be 19 mm (3/4 inch) thick exterior grade plywood. Provide two 100 mm by 100 mm (four by four inch) posts extending full height of sign and 900 mm (three feet) into ground. Set bottom of sign level at 1200 mm (four feet) above ground.
- B. Paint all surfaces of Safety Sign and posts with one prime coat and two coats of white gloss paint. Letters and design shall be painted with gloss paint of colors noted.
- C. Maintain sign and remove it when directed by Resident Engineer.
- D. Post the number of accident free days on a daily basis.

- E. Safety Sign shall not be permitted to be affixed to any portion of the existing building construction. Safety Signage shall be free-standing and totally independent of the existing Building construction.

1.31 PHOTOGRAPHIC DOCUMENTATION

- A. During the construction period through completion, provide photographic documentation of construction progress and at selected milestones including electronic indexing, navigation, storage and remote access to the documentation, as per these specifications. The commercial photographer or the subcontractor used for this work shall meet the following qualifications:

1. Demonstrable minimum experience of three (3) years in operation providing documentation and advanced indexing/navigation systems including a representative portfolio of construction projects of similar type, size, duration and complexity as the Project.
2. Demonstrable ability to service projects throughout North America, which shall be demonstrated by a representative portfolio of active projects of similar type, size, duration and complexity as the Project.

- B. Photographic documentation elements:

1. Each digital image shall be taken with a professional grade camera with minimum size of 6 megapixels (MP) capable of producing 200x250mm (8 x 10 inch) prints with a minimum of 2272 x 1704 pixels and 400x500mm (16 x 20 inch) prints with a minimum 2592 x 1944 pixels.
2. Indexing and navigation system shall utilize actual AUTOCAD construction drawings, making such drawings interactive on an on-line interface. For all documentation referenced herein, indexing and navigation must be organized by both time (date-stamped) and location throughout the project.
3. Documentation shall combine indexing and navigation system with inspection-grade digital photography designed to capture actual conditions throughout construction and at critical milestones. Documentation shall be accessible on-line through use of an internet connection. Documentation shall allow for secure multiple-user access, simultaneously, on-line.
4. Before construction, the building pad, adjacent streets, roadways, parkways, driveways, curbs, sidewalks, landscaping, adjacent utilities and adjacent structures surrounding the building pad and site shall be documented. Overlapping photographic techniques shall be used to insure maximum coverage. Indexing and navigation accomplished through interactive architectural drawings. If site

- work or pad preparation is extensive, this documentation may be required immediately before construction and at several pre-determined intervals before building work commences.
5. Construction progress for all trades shall be tracked at pre-determined intervals, but not less than once every thirty (30) calendar days ("Progressions"). Progression documentation shall track both the exterior and interior construction of the building. Exterior Progressions shall track 360 degrees around the site and each building. Interior Progressions shall track interior improvements beginning when stud work commences and continuing until Project completion.
 6. As-built condition of pre-slab utilities and site utilities shall be documented prior to pouring slabs, placing concrete and/or backfilling. This process shall include all underground and in-slab utilities within the building(s) envelope(s) and utility runs in the immediate vicinity of the building(s) envelope(s). This may also include utilities enclosed in slab-on-deck in multi-story buildings. Overlapping photographic techniques shall be used to insure maximum coverage. Indexing and navigation accomplished through interactive site utility plans.
 7. As-built conditions of mechanical, electrical, plumbing and all other systems shall be documented post-inspection and pre-insulation, sheet rock or dry wall installation. This process shall include all finished systems located in the walls and ceilings of all buildings at the Project. Overlapping photographic techniques shall be used to insure maximum coverage. Indexing and navigation accomplished through interactive architectural drawings.
 8. As-built conditions of exterior skin and elevations shall be documented with an increased concentration of digital photographs as directed by the Resident Engineer in order to capture pre-determined focal points, such as waterproofing, window flashing, radiused steel work, architectural or Exterior Insulation and Finish Systems (EIFS) detailing. Overlapping photographic techniques shall be used to insure maximum coverage. Indexing and navigation accomplished through interactive elevations or elevation details.
 9. As-built finished conditions of the interior of each building including floors, ceilings and walls shall be documented at certificate of occupancy or equivalent, or just prior to occupancy, or both, as directed by the Resident Engineer. Overlapping photographic techniques shall be used to insure maximum coverage.

Indexing and navigation accomplished through interactive architectural drawings.

10. Miscellaneous events that occur during any Contractor site visit, or events captured by the Department of Veterans Affairs independently, shall be dated, labeled and inserted into a Section in the navigation structure entitled "Slideshows," allowing this information to be stored in the same "place" as the formal scope.
 11. Customizable project-specific digital photographic documentation of other details or milestones. Indexing and navigation accomplished through interactive architectural plans.
 12. Monthly (29 max) exterior progressions (360 degrees around the project) and slideshows (all elevations and building envelope). The slideshows allow for the inclusion of Department of Veterans Affairs pictures, aerial photographs, and timely images which do not fit into any regular monthly photopath.
 13. Weekly (21 Max) Site Progressions - Photographic documentation capturing the project at different stages of construction. These progressions shall capture underground utilities, excavation, grading, backfill, landscaping and road construction throughout the duration of the project.
 14. Regular (8 max) interior progressions of all walls of the entire project to begin at time of substantial framed or as directed by the Resident Engineer through to completion.
 15. Detailed Exact-Built of all Slabs for all project slab pours just prior to placing concrete or as directed by the Resident Engineer.
 16. Detailed Interior exact built overlapping photos of the entire building to include documentation of all mechanical, electrical and plumbing systems in every wall and ceiling, to be conducted after rough-ins are complete, just prior to insulation and or drywall, or as directed by Resident Engineer.
 17. Finished detailed Interior exact built overlapping photos of all walls, ceilings, and floors to be scheduled by Resident Engineer prior to occupancy.
 18. In event a greater or lesser number of images than specified above are required by the Resident Engineer, adjustment in contract price will be made in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).
- C. Images shall be taken by a commercial photographer and must show distinctly, at as large a scale as possible, all parts of work embraced in the picture.

- D. Coordination of photo shoots is accomplished through Resident Engineer. Contractor shall also attend construction team meetings as necessary. Contractor's operations team shall provide regular updates regarding the status of the documentation, including photo shoots concluded, the availability of new Progressions or Exact-Builts viewable on-line and anticipated future shoot dates.
- E. Contractor shall provide all on-line domain/web hosting, security measures, and redundant server back-up of the documentation.
- F. Contractor shall provide technical support related to using the system or service.
- G. Upon completion of the project, final copies of the documentation (the "Permanent Record") with the indexing and navigation system embedded (and active) shall be provided in an electronic media format, typically a DVD or external hard-drive. Permanent Record shall have Building Information Modeling (BIM) interface capabilities. On-line access terminates upon delivery of the Permanent Record.

1.32 FINAL ELEVATION DIGITAL IMAGES - NOT APPLICABLE

1.33 HISTORIC PRESERVATION

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor shall immediately notify the Resident Engineer verbally, and then with a written follow up.

- - - E N D - - -

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABILIZATION
VA PROJECT: 695-11-117

SECTION 01 01 10 - FSS
FIRE SAFETY SECTION

PART 1 - GENERAL

1.1 DESCRIPTION: This section covers safety precautions required by all contractor personnel to safeguard patients, visitors, and Department of Veterans Affairs employees.

1.2 RELATED SECTION

A. Section 01 00 00 - GENERAL REQUIREMENTS

1.3 APPLICABLE PUBLICATIONS

A. NFPA standard No. 241 - Safeguarding Construction, Alteration, and Demolition Operations.

B. NFPA Standard No. 51B - Fire Protection in use of cutting and welding Processes.

C. NFPA Standard No. 101 - Life Safety Code (Current Edition)

D. OSHA Regulations 29CFR1926 - Construction Industry Standards.

1. Sub-part P- Fire Protection and Prevention









2. Sub-part J- welding and Cutting

PART 2 - PRODUCTS

2.1 PRODUCTS:

A. Table F-1 indicates which fire extinguishers are required for various combustible materials.

**Table F-1 FIRE
EXTINGUISHER
S DATA**

TYPE OF AGENT					
 Each class of fire calls for the right kind of extinguisher. Using the wrong extinguisher is dangerous and may do more harm than good. For your own protection, you should know the classes of fire, the different types of extinguishers, how to use them and why.	Multi-Purpose Dry Chemical Monoammonium Phosphate	Regular Dry Chemical Sodium Phosphate	Halon 1211 Bromoclorodifluoromethane	Carbon Dioxide (CO ₂)	Water
 Fires in ordinary combustible materials - paper, wood, and many plastics. Quenching by water or insulating by Multi-Purpose (ABC), dry chemical is effective.	Yes-excellent Adheres to burning materials and forms a coating which will smother the fire and minimize reflash.	No	Yes-excellent Halon 1211 leaves no residue. May not normally affect equipment.	No	Yes Water saturates materials and prevents rekindling.
 Fires in flammable liquids such as gasoline, oils, grease, tars, paints, lacquers and flammable gases. Multi-Purpose (ABC), Regular Dry Chemical, Halon 1211, and Carbon Dioxide agents smother these fires.	Yes-excellent Dry chemical agent smothers fire. Screen of agent shields user from heat.	Yes-excellent Dry chemical agent smothers fire. Screen of agent shields user from heat.	Yes-excellent Halon 1211 leaves no residue. May not normally affect equipment.	Yes-excellent Carbon Dioxide leaves no residue, may not normally affect or damage equipment.	No Water will spread flammable liquids and not put it out.
Fires in electrical equipment.. Motors, generators, switches and appliances.. where a non conducting extinguishing agent Multi-Purpose (ABC), Regular Dry Chemical, Halon 1211 or Carbon Dioxide is required.	Yes-excellent Dry chemical agent is non-conductive. Screen of agent shields user from heat.	Yes-excellent Dry chemical agent is non-conductive. Screen of agent shields user from heat.	Yes-excellent Halon 1211 is a non-conductor, leaves no residue, may not normally affect or damage electrical equipment.	Yes-excellent Carbon Dioxide is a non-conductor, leaves no residue, may not normally affect or damage electrical equipment.	No Water, a conductor, should never be used on live electrical fires.
	5 to 20 feet 10 to 25 seconds	5 to 20 feet 10 to 25 seconds	8 to 18 feet 8 to 18 seconds Depending on size	3 to 8 feet 8 to 30 seconds	Up to 40 feet Up to 60 seconds
RANGE ----- Discharge Time -----					

B. Cover Plates

1. Receptacles - Manufactured by H. B. Enterprises or equal. Catalog No. 007
2. Switches - Manufactured by N. 13. Enterprises. Catalog No. 003

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABILIZATION
VA PROJECT: 695-11-117

PART III - EXECUTION

- 3.1 Construction offices and trailers used as storage are required to be located a minimum distance from permanent structures. Veterans Administration approval of location does not relieve the contractor of its ultimate responsibility of meeting OSHA and NFPA Regulation.
- 3.2 Contractor is required to obtain a permit from the office of the Chief Engineer prior to start of each welding/cutting operation. The Chief Engineer reserves the right to delegate the Project Manager as approving official. The following form is acceptable for obtaining approval and may be reproduced at contractor's expense. Other form must be submitted for approval by the Project Engineer prior to use.
- 3.3 The following checklist is provided to the contractor as a quick reference only. NFPA 513 should be consulted for official requirements for protection of the area.

REQUEST FOR SPRINKLER SYSTEM SHUTDOWN

Date Closed:	_____	Time Closed:	_____
Planned Date Restored:	_____	Time Restored:	_____
Location of System:	Bldg: _____	Floor: _____	Wing: _____
Area this will affect:	_____		
Impact on adjacencies:	_____		
Reason for shutdown:	_____		
If Construction, Give Project#:	_____	Generic Maintenance Contract	_____
Sprinkler Contractor:	_____	General Contractor:	_____
Phone:	_____	Phone:	_____
Remarks:	_____	Approval [x]	Disapproval []
Approving Authority Comments: _____			

Signature/Approval Authority

Copy one (1) VAMC, Form No 138-S1

Revised 2/05

Location of System: Building: _____	Date Valve Reopened: _____
Wing: _____	Time Valve Reopened: _____
Floor: _____	Date Closed: _____
	Time Closed: _____
Print Name _____	Signature of Requestor _____
	Signature of FM Divisional Manager _____
REQUESTOR OF SHUTDOWN ID: O-001391 Copy two (2) VAMC, Form No 138-S2	Copy three (3) VAMC, Form No 138-S3 1,421

PERMIT FOR CUTTING AND WELDING WITH PORTABLE GAS, ELECTRICAL, OR ARC EQUIPMENT

Date Disabled: _____ Time Disabled: _____
Planned Date Restored: _____ Time Restored: _____
Location of System: Bldg: _____ Floor: _____ Wing: _____
Area this Will Affect: _____ Impact on Adjacencies: _____
The location where the work is to be done had been examined, necessary precautions taken, and permission is granted for this work.
Work to Be Accomplished: _____
Construction Project#: _____ Generic Maintenance Contract _____
Subcontractor: _____ General Contractor: _____
Phone: _____ Phone: _____
Approval [] Disapproval []
Signature/Approval Authority Approving Authority Comments:

ATTENTION

Before approving any cutting and welding permit, the Contractor's fire safety supervisor or his appointee and/or the PAI or his designee shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with NFPA 51B. Contractor is responsible to check off each item below that applies or indicate N/A.

PRECAUTIONS

- _____ Sprinklers in service. Fully charged and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area.
_____ The hot work equipment to be used shall be in satisfactory operating condition and in good repair.
_____ The following shall apply to hot work done in close proximity to a sprinkler head:
(a) A wet rag shall be laid over the sprinkler head and then removed at the conclusion of the welding or cutting operation.
(b) During hot work, special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems (e.g., special extinguishing systems or sprinklers).
_____ Nearby personnel shall be suitably protected against dangers such as heat, sparks, and slag.

WITHIN 35 FT. OF WORK

- _____ Floors swept clean of combustibles
_____ If relocation is impractical, combustibles shall be protected with fire-retardant covers or otherwise shielded with metal or fire-retardant guards or curtains.
_____ Combustible floors (except wood on concrete) shall be kept wet, covered with damp sand, or protected by noncombustible or fire-retardant shields.
_____ Where floors have been wet down, personnel operating arc welding equipment or cutting equipment shall be protected from possible shock.
_____ Openings or cracks in walls, floors, or ducts within 11 m (35 ft) of the site shall be tightly covered with fire-retardant or noncombustible material to prevent the passage of sparks to adjacent areas.
_____ Covers suspended beneath work to collect sparks

WORK ON WALLS OR CEILINGS

- _____ Construction noncombustible and without combustible covering
_____ Combustibles moved away from opposite side of wall
_____ If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire-retardant shields or guards shall be provided to prevent ignition.
_____ If hot work is done on one side of a wall, partition, ceiling, or roof, one of the following criteria shall be met:
(a) Precautions shall be taken to prevent ignition of combustibles on the other side by relocating the combustibles.
(b) If it is impractical to relocate combustibles, a fire watch shall be provided on the side opposite from where the work is being performed.

WORK ON ENCLOSED EQUIPMENT (Tanks, containers, ducts, dust collectors, etc.)

- _____ Containers purged of flammable vapors
_____ Ducts and conveyor systems that might carry sparks to distant combustibles shall be shielded, or shut down, or both.

FIRE WATCH

- _____ To be provided during and 30 minutes after operation
_____ Supplied with extinguisher
_____ Trained in use of equipment and in sounding fire alarm

FINAL CHECK-UP

- _____ Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found fire safe.

Signed: _____
(Supervisor of Fire Watcher)

SECTION 01 01 10 - SN

SPECIAL NOTES

PART 1: GENERAL

1.1 Not Used.

1.2 FIRE ALARM SYSTEM:

FIRE/SECURITY ALARM SYSTEMS: Contractor shall advise the Graphic Control Center and/or the Police Desk at extension 41010/42222 respectively, prior to any work which might result in the Fire Alarm System or Security System (this includes but is no limited to: Smoke Detectors, Water Flow Switches, Pull Stations, Sprinkler Heads, Motion Detectors, Door Contacts, Security Door Controls, etc.) being activated, in addition to having an approved outage form from the Facility Management Department. Notification to Graphics and/or the Police Desk and having an outage form, does not absolve the contractor from following the proper procedures to prevent the system from activating, i.e. covering the smoke heads with paper bags, closing valves, containing dust, monitoring and controlling security devices, etc.). If any system activates due to the contractor's failure to notify the Graphic Control Center, the Contractor's failure to follow proper procedures, or the Contractor's failure to obtain an outage form, a Modification/Settlement by Determination deduction of \$2500.00 per alarm/event or notice from the Police that a construction area was left unsecured will be issued to the contractor.

1.3 SCHEDULING OF WORK:

- A. Contractor shall verbally schedule work areas with Resident Engineer not less than fifteen (15) calendar days in advance of commencement of work. Verbal notification shall be backed up and verified in writing.
- B. Contractor shall verbally schedule outages or service interruptions with Resident Engineer not less than fifteen (15) calendar days in advance of intended commencement of work. Notification does not guarantee the date of scheduled outage or service interruption however Resident Engineer will schedule such dates and inform the contractor. Date will be scheduled with medical center personnel when service interruption will minimize affect to hospital patients and operations. Contractor to submit VA System Outage Request form to Resident Engineer not less than fifteen (15) calendar days in advance of intended commencement of outage work. Contractor to attend (2) weekly pre-outage meetings with Engineering and staff to coordinate actual date of outage, duration, time of outage, phasing, and affected services. In addition, contractor to attend the pre-outage meeting one hour prior to outage to coordinate communications, readiness, pre-outage checklist, document requirements, temporary measures, lock out tag out and other outage requirements and procedures.
- C. Contractor to attend weekly construction meetings.

1.4 PROTECTION OF WORK AREAS:

Contractor to provide drop cloths when working in occupied areas to avoid staining or damaging existing carpets or vinyl tile floors.

1.5 HOURS OF WORK:

- A. The hours of contract work shall be from 7:00 a.m. until 4:30 p.m. the normal work shift for hospital employees, the contractor shall verify shift or shifts required for construction areas. Other than normal, after (off) hours, including federal holidays shall be scheduled two days prior to starting with the Project Manager. These off hours will be required to complete the project in the time allotted for the contract at no additional cost to the Department of Veterans Affairs. Upon approval of the Department of Veterans Affairs, the contractor will propose the scope or extent of off hour work due to individual contractor resources available to accomplish this project in the time allotted. In addition, these off hours will be required for utility/service interruptions, and any/other work that may interrupt the operation of the occupied space, i.e., some road construction, demolition, work in occupied areas, work affecting occupied areas, etc. Some noise producing demolition operations will be required to be scheduled for off work hours as directed by Resident Engineer and described on drawings.

- B. Certain work items, which require off-hour work, have been identified. These items are indicated on the drawings. Refer, in particular, to Phasing Notes on Drawings. All drawings shall be reviewed for off-hour work requirements and items creating disturbance to the hospital staff or patient care must be performed during off-hour working periods as established and approved by the VA Engineer.
- C. Building will be occupied during performance of work, but areas of alterations will be vacated. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas, which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by the VA so that Medical Center operations will continue during the construction period. Contractor to construct 7 feet tall by 5 feet wide metal stud and drywall tunnels through occupied space as deemed necessary by the VA for access by Medical Center personnel and maintaining construction operations.

1.6 SUBMITTAL APPROVAL AND START OF CONSTRUCTION PROJECT:

No work may commence prior to the contractor receiving written approval of all submittals related to work on this contract. Delivery of submittals to the COTR or verbal acknowledgement of receipt by the Project Manager **does not** constitute approval.

1.7 EMERGENCY SERVICE:

All offerors, if successful, must be able to respond to all contract and contractor created emergency services resulting from contractor actions and installations, as determined by the Department of Veterans Affairs Resident Engineer, with qualified staff personnel within one (1) hour of verbal notification during construction stages and warranty period. Bidders must be prepared to show proof, in writing, that they can satisfy this requirement prior to award.

1.8 KEYS:

Keys for access to construction/work areas may be issued to the contractor at the discretion of the Project Manager. Up to three sets of keys will be provided at no cost. Additional keys will be provided for a charge of \$5.00 per key, payable by check to the Department of Veterans Affairs. All keys issued will be signed for and issued to the General Contractor. Upon completion of the work, failure to return all issued keys to the Project Manager will result in the issuance of a Settlement by Determination in the amount of \$100.00 for each outstanding key. In addition, a \$5.00 fee will be paid to VA for each outstanding key. Keys will be provided through the FM SAM Box. Keys are to be picked up and returned daily. If keys are not returned by the end of the day, a modification of \$5.00/key per day will be assessed against the contractor.

1.9 SAFETY ITEMS:

- A. Training: All employees of contractor and subcontractor shall be aware of the egress routes from the construction areas. It is the contractor's responsibility to ensure all employees are aware of the fire alarm codes for the building they are working in and participate in fire alarm drills and actual fire alarms.
- B. Barricades: The contractor is responsible to erect barricades, construction and safety signs, and new egress routes. The barricades will be erected to restrict areas where hazardous operations are performed. The construction and safety signs shall consist of caution signs as determined and approved by VA; egress signs, where egress has been altered for construction; and any applicable hazardous warning signs. If the egress is changed due to construction, the contractor shall provide temporary directional signs for changes as determined by VA and for construction of any walkways, steps, or overhead protection scaffolding or the like as required providing a new means of egress.
Emergency egress plan shall be developed by the contractor and submitted for approval by the designated VA safety manager before egress routes are altered.
- C. Fire Extinguisher: The contractor and subcontractor's shall provide fully charged and fully operational fire extinguishers as required and in accordance with section FSS on the job site(s) at all times. Reference section 01 01 10 FSS.

- D. Debris: Combustible storage and debris shall be kept to the lowest level necessary for required daily operations. The construction area shall be kept clean as indicated in general requirements and conditions
- E. Gasoline Powered Equipment: Gasoline powered equipment shall not be used within the confines of any building on the Medical Center without specific written permission from the Chief, Engineering Service.
- F. Fire/Smoke Doors: Fire and/or smoke doors shall not be propped open or prevented from closing and latching. This includes mechanical equipment rooms and utility closet doors.
- G. Construction Site Phone: Contractor to run wiring from telephone closet to the construction space for the installation of a VA phone in the construction space. Installation of the phone is required prior to construction can begin. The VA will provide the phone.
- H. Construction Hard Hats: General Contractor to provide (4) sets of hard hats and safety glasses for each worksite for VA staff use.
- I. Exit Signs:
 - a. Inside Construction Space: Contractor to provide luminescent Exit Signs throughout the construction space such that while standing in any place within the construction space, an Exit sign is visible and the path of egress can be followed.
 - b. Outside Construction Space: Contractor will cover, relocate, etc. Exit signs impacted due to their construction operations as directed by the ILSM and the VA Safety Officer.

1.10 SECURITY OF CONSTRUCTION SITES – Contractor Regulations

- A. All construction sites must be secured to prevent inappropriate access by patients, visitors, and employees. While such security fences, doors, and barricades are temporary, they must be substantially installed to control access to the site. The existing security (Pegasys by Johnson Controls and Ingersoll Rand) system must be extended to each construction access door. Each construction door must be provided with an Ingersoll Rand Integrated Reader Lock programmed to the existing VA security system. Construction sites and all security measures must be monitored daily to ensure that security is maintained. Local VA Police must be alerted about the construction project. At the close of activity daily, before securing the site or portions of the site, the contractor must ensure that there are no patients, visitors, or staff in the area. If construction site problems arise, the Contracting Officer and COTR will take appropriate action to correct any and all safety and security conditions.
- B. VA engineering, safety/fire department, and police staff must have the right to access the construction site as needed to perform their assigned responsibilities.
- C. Lock up the worksite at all times to prevent patients and other unauthorized people from entering the site.
- D. The need for job site security is much greater when work is being conducted in psychiatric areas to protect the safety of the patients. All job boxes, tools, etc., must be locked up even when workers are on site unless there's enough activity to assure that patients cannot access tools or site. Verify that no one is in the construction area upon locking up the site for the evening.
- E. Two evacuation routes from the worksite must be maintained at all times.
- F. Contractors may lock up their tools etc., with personal locks.

1.11 PENETRATIONS:

A. WALL:

- a. All wall and/or floor penetrations created by work on this contract, whether by demolition or new construction, shall be patched by the general contractor or as assigned by the general contractor. All patching materials shall be of like kind or a suitable substitute approved by NFPA or UL.
- b. If the permit is for other than inspection, a Follow-Up Inspection page will need to be filled out by the person performing the installation/removal work, which then needs to be signed and returned to whoever originally issued the permit. The permit initiator is then responsible for checking the areas listed on the permit to ensure firestopping was completed according to Facility standards and penetrations sealed with an approved fire/smoke sealant compound so as to maintain fire and smoke separation integrity. Documentation of the sealant or system used in the penetration must be made available at the affected penetration by the permit requestor at the time of permit completion inspection. The program or person completing the follow up inspection must validate that the sealant compound or system is properly rated and installed for maintaining the rating of the affected smoke or firewall. Photo-documentation in lieu of interim inspections can be performed to validate work.
- c. ONLY (1) one type of fire sealant is permissible per hole.
- d. The permit will be in this person's possession while all inspections and/or work are being performed.

B. CEILINGS:

- a. To ensure that proper ceiling penetrations are sealed, all internal departments and contractors doing any cabling, wiring, plumbing, etc., must obtain a ceiling access permit from Facilities Services prior to installation.
- b. All wall penetrations must be located, marked, and sealed by contractor responsible for penetration. As penetrations are sealed, Facilities Service must be contacted to inspect penetrations for proper sealing.
- c. If the permit is for other than inspection, a Follow-Up Inspection page will need to be filled out by the person performing the installation/removal work, which then needs to be signed and returned to whoever originally issued the permit. The permit initiator is then responsible for checking the areas listed on the permit to ensure firestopping was completed according to Facility standards and penetrations sealed with an approved fire/smoke sealant compound so as to maintain fire and smoke separation integrity. Documentation of the sealant or system used in the penetration must be made available at the affected penetration by the permit requestor at the time of permit completion inspection. The program or person completing the follow up inspection must validate that the sealant compound or system is properly rated and installed for maintaining the rating of the affected smoke or firewall. Photo-documentation in lieu of interim inspections can be performed to validate work.
- d. The permit will be in this person's possession while all inspections and/or work are being performed.
- e. At the end of each work day and prior to leaving work site, the contractor shall replace all ceiling tiles temporarily removed to do work above finished ceilings in corridors.
- f. If it is not practical to replace all ceiling tiles on a daily basis the contractor is to construct 7 feet tall by 5 feet wide metal stud and drywall tunnels through occupied spaces as deemed necessary by the VA for access by Medical Center personnel and maintaining construction operations. Upon the first incident of the contractor not replacing the ceiling tiles, this tunnel construction will have to commence immediately prior to any further construction on the project.

C. Reference section 01 01 10 – 1HR for additional information.

1.12 PHASING (NOT USED)

1.13 SCAFFOLDING:

Prior to setup of all scaffolding, the contractor is to provide a submittal of the scaffolding design through the submittal review process. The scaffolding design is to be stamped by a professional engineer and shall be submitted to the Resident Engineer for review.

No scaffolding shall be permitted to be attached to any part of the existing building construction and shall be totally independent and free-standing. No demolition or selective demolition shall occur as part of the scaffolding erection. Surface protection should be provided and incorporated for any scaffolding placed on historic floors.

1.14 ENERGY EFFICIENCY REQUIREMENTS:

- A. Federal Executive Order #13423/#13514 requires all energy efficiency materials, equipment, and systems to be evaluated and if feasible incorporated into VA Projects. The A/E, prime contractor, and all subcontractors shall cooperate with the Federal Government in specifying, evaluating, documenting, purchasing, and installing energy efficient equipment that meet basic energy efficiency criteria established by the VA. The criteria can be defined as comparing total energy savings to life cycle cost of the equipment. To accomplish this objective, the A/E shall produce an Energy Equipment Schedule comparing a description of each standard piece of equipment (system) versus a description of recommended efficient equipment (or system); including the estimated purchase price, estimated cost to install, maintain, and operate the equipment as well as the estimated annual energy usage and estimated useful life for each piece of equipment (or system).
- B. All design and installation will be in accordance with current VAMC, HVAC design guides, NEC, NFPA, ASHRAE 90.1, state, local and all VA and federal codes.
- C. The VA intends to provide energy savings equipment and design modifications for current energy usage to the most efficient and economical level possible.

1.15 INSPECTIONS:

All mechanical and electrical work shall be inspected by Engineering Service (Shop & Resident Engineer) personnel prior to being put into operation or closing up if work will be hidden by walls, ceilings, drop ceilings, cover plates, access panels, etc. Contractor shall notify the VA RE a minimum of two days prior to the inspection date, times and dates shall be scheduled and agreed upon by VA. Installations will be inspected by these VA personnel for work in compliance with State, Federal, Local, Dept. of Veterans Affairs Codes, regulations and contract specifications. If corrections, alterations, adjustments, new construction etc. is required, the VA will be notified within 48 hours of completion of such items. These inspections and corrections, alterations, etc. will be made at no additional time or cost to VA.

1.16 CONTRACTOR'S AGREEMENT - RULES AND REGULATIONS FOR ALL CONTRACTORS

The following is the contractor's agreement required to be signed at the pre-construction meeting and updated monthly when new subcontractors start working on the job site. The agreement will be preceded by a training video provided by the VA. The agreement is the general contractor's responsibility to ensure all subcontractor personnel are trained and acknowledge (sign) the agreement.

A. STANDARD POLICY

All outside General contractors and Sub-contractors will coordinate all work within the hospital with Facilities Management before beginning work.

B. PURPOSE

General Contractor will ensure that each individual General Contractor and Sub-Contractor employee is responsible for complying with established hospital standards, applicable OSHA Safety Requirements, federal, state and local environmental regulations, wearing prescribed safety equipment, and preventing avoidable accidents.

C. PROCEDURE

General Contractor will ensure that each individual general contractor and sub-contractor employee review, understand and acknowledge (sign) the following information prior to the commencement of work scheduled at this facility. General Contractor will forward copies of signed acknowledgements to Project Engineer of all new employees on a monthly basis.

The following building rules and regulations affect all contractor personnel, suppliers, and vendors:

D. Access to Construction Areas

- Access is limited to areas such as critical care and surgical units, as well as mechanical/electrical rooms, etc. Access can be obtained through Facilities Service.
- Access to any floors of the facility after normally scheduled work hours (Monday-Friday, 7:00 a.m.-5:00 p.m.) must be scheduled in advance with the Project section of Facilities Service. Police and Security reserves the right to refuse access to anyone without prior authorization and identification.
- Ready access for the Engineering, Safety, Police and (the Fire Department) shall be maintained to all areas under construction at all times.
- Areas under construction shall be locked during off-hours. Keys and cylinders for this purpose are obtained through Facilities Service. Contractors will not put their locks on any doors without VA approval.

E. Accidents and Injuries

- First Aid/Medical Aid/Emergency Treatment for workers: The contractor must post emergency phone numbers and treatment facilities if any contractor employees are injured on the job, or need medical treatment
- Work site injuries must be reported to the VA. The VA has an accident reporting form (form number 2162). The COTS/ Safety/ or Security and Police Service will initiate the 2 162. Once the VA has completed the supervisor's portion the injured individual will be required to complete the narrative portion of the report. The service chief responsible for the contract is also required to sign the report and forward the original report to the Safety Section.

F. Asbestos

- There are both friable and non-friable asbestos-containing materials located within the hospital complex. Inspection reports are located in the Facilities Service Department. Contractors are required to be aware of the asbestos materials located in the vicinity of their work. Further, all contractors are expressly forbidden to disturb any asbestos-containing materials unless specifically authorized in writing by VA. Under no circumstances are any materials supplied or installed by the contractor to contain asbestos in any form or quantity.
- Asbestos removal contractors will be trained and licensed, and will follow all OSHA rules, VA specifications, state and local regulations from notification to disposal.
- A VA representative will verify the adequacy of the barriers and ventilation before any asbestos removal work is conducted.
- The contractor is responsible for monitoring his own employees' exposure to asbestos.
- Additional specific asbestos removal specifications will apply.
- Contractor to provide a Fiscal Year breakdown of Asbestos Costs on the project.

G. ACM TRACE WORK OPERATIONS

- **ACM TRACE RESULTS** - Should renovation activities deem the material friable due to cutting, grinding or other mechanical means of removal, an employer is bound by OSHA 29 CFR regulations 1926.1200 (d) (5) (iv) to protect their employees. This may determine that removal of the materials be performed by asbestos abatement workers trained in 29 CFR 1926.1101.

**OSHA regulation 1910.1200 HAZARDOUS COMMUNICATION Section (d)(5) Hazard determination "...employer shall determine the hazards of mixture of chemicals as follows: (iv) "If the...employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent...could be released in concentrations which would exceed an established OSHA permissible exposure limit...or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard."*

- **General Summary:**
 1. Employees, contractors, etc. must be warned about the presence of asbestos.
 2. The contractor must have a competent person on site during work. (At a minimum, it should be a trained, certified asbestos supervisor).
 3. Personal exposure assessments (negative exposure assessment) are required (PCM analysis) and workers should begin work with PPE.
 4. Wet methods and daily clean up and sealing waste in leak tight containers are required. The following is a list of references from OSHA guides. Note: The reference to the word "sheet rock" is based on trace (<1%) of asbestos being present in the "sheet rock."
- The contractor will be responsible for proper work practices and prohibitions for all construction activities involving material that contains any amount of asbestos regardless of the exposure levels. And the standard has exposure-based requirements, consisting of a 0.1 fiber/cc 8-hour TWA PEL and a 1 fiber/cc 30-minute excursion limit, and other requirements that apply whenever worker exposures exceed either or both of the limits, regardless of the amount of asbestos contained in the materials involved.
- If some of the items associated with the installed sheetrock contain some asbestos but none of them contain >1% asbestos, then removal of the sheetrock is considered unclassified asbestos work. This means that only certain ones of the standard's work practice and engineering control obligations, and prohibitions pertain. Some of the general ones do not pertain because they apply to installed building materials containing >1% asbestos (ACM). How many of the eligible general work practice and engineering control obligations, and prohibitions are applicable depends on whether the employee levels of exposure to airborne asbestos exceed either of the asbestos PELs. In further explanation: These OSHA references are specific to this issue.
- If the employees' asbestos exposures exceed neither asbestos PEL, then only two of standard's general work practice control procedures and three of the standard's general prohibitions pertain to the sheetrock removal operation; none of the standard's engineering control methods pertain to the sheetrock removal operation. Those general work practice procedures and general prohibitions the employer must observe under such a condition are those presented at:
- 29 CFR 1926.1101(g)(1)(ii), which requires: **wet methods, or wetting agents, to control employee exposures during asbestos handling, ... removal, cutting, ... and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to for example, the creation of electrical hazards ... [and] equipment malfunction...**; 29 CFR 1926.1101(g)(1)(iii), which requires: **prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers...**; 29 CFR 1926.1101(g)(3)(i), which prohibits: **high-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air**; 29 CFR 1926.1101(g)(3)(ii), which prohibits: **compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air**; and 29 CFR 1926.1101(g)(3)(iv), which prohibits: **employee rotation as a means of reducing employee exposure to asbestos.**

H. Clean-Up

- All work activity within occupied portions of the facility shall be immediately cleaned and restored to its original finished condition upon completion of the activity. If the activity continues into the next workday, the area shall be left safe, clean, and presentable.
- Public restrooms are not to be used for the cleaning of tools or equipment, i.e., paintbrushes, rollers, finishing tools, etc. Janitor's slop sinks are available for this purpose. If janitor's closets are used, they must be cleaned.
- Trash, combustible waste, and excess construction materials must be removed daily to prevent accumulation. Contractors must arrange for the removal of their debris and waste.
- All work for an area must be confined within that space. Public corridors, stairwells, equipment rooms, and vacant floors are not to be used for the storage of materials or as a workshop. Tracking of construction dirt into the public corridors or stairwells must be prevented. The contractor will provide dampened walk-off mats at all entrances and exits from the construction area.
- If smoke detectors are covered during dust-producing activities, they must be uncovered daily.

I. Compressed Gas Cylinders

- Compressed gas cylinders are very dangerous if not treated properly.
- Employees who work with compressed gas cylinders must have specific training.
- Make sure that they are secured properly when in use or in storage.
- Always keep the caps on the cylinders when they are not in use.
- See also Hot Work section.

J. Confined Space

- Confined Space Entries. All Confined Spaces are clearly marked on campus. NO ENTRY is allowed in the areas without prior approval by the Project Engineer. NO ONE will be allowed to enter these areas without the proper qualifications, equipment and training as required by the OSHA Standards (29 CFR 1910.147)
- Identify storm sewers, underground electrical vaults, and all other areas that require confined space permits. (e.g., a map showing the locations of all the confined spaces located in the Facilities Service Department).
- All hospital personnel that would require entry into these spaces must abide by the Confined Space Program Procedure.
- It is the sole responsibility of any outside contractor doing work on a VA Medical Center campus to coordinate entry into any of these spaces or any other marked permit required confined spaces with the medical center.
- Anyone entering a permit-required confined space must follow Occupational Safety and Health Administration (OSHA) Regulations, 29 CFR 1910.120.
- **Contractor to submit as a formal submittal the Confined Space Entry program (and CSE Permit if needed).**

K. Contractor Room/Space Guidelines:

- Materials will be kept on the job site, in the contractor's room or in storage space provided by the Contractor via trailer located in the VA corporation yard on the North East section of the VA grounds.
- Any shared space within storage room(s) must be accessible to Facilities Service. Do not block access to electric panels or fire protection equipment.
- Hallways are not to be used for storage.
- Contractors will manage the area and assure the site is kept clean and safe. (OSHA standards apply.)
- Any disputes or concerns will be directed to the Facilities Service Manager.

L. Damage by Contractors

- Any damage caused by the contractor's employees is to be reported to the COTR or Facilities Service Project Section immediately.

M. Deliveries

- All material deliveries at the loading dock must be coordinated with the Receiving Department in advance.

N. Dress Code

- All personnel must be appropriately dressed for their work. T-shirts or garments with obscene or suggestive messages are not permitted. Personnel found improperly dressed will be asked to leave the facility. No construction staff is allowed to remove shirts or other clothing. No articles may include offensive statements/graphics.

O. Dust Barriers and Ventilation Requirements

- Reference section 01 01 10 IC.
- Dust barriers are needed to protect occupied areas on any portion of the job that has potential to create dust.

P. Elevator Usage

- Contractors shall not hold or block from use any public elevators in any building unless authorized by the COTR.
- Contractors shall use "B" bank freight elevators only for the delivery and transportation of materials and demolition materials. Contractors shall not hold or block public elevators from use in any building. .

Q. EMERGENCIES

Fire Plan - There is no difference between a fire drill and an actual fire.

General Contractor will ensure that each employee on the worksite knows where the pull stations are in the areas you are working.

If you are in the area of the fire:

- R Rescue anyone from the area if necessary**
- A Pull the nearest Pull Station**
- C. Contain the fire by closing all doors in the area**
- E Extinguish if possible or Evacuate the area immediately**

If you are NOT in the area of the fire:

***Construction Workers* are to cease activities, stay in place, and wait for further instructions or cancellation of the fire drill.**

DO NOT move through the hospital. DO NOT use the elevators or stairwells.

- Medical Emergencies - Any contractor who witnesses a medical emergency is to pick up a nearest phone and dial "911" or the operator and describe the condition of the emergency.
- Accidents/Injuries - The contractor must post emergency phone numbers and treatment facilities for any injured employee.
- Worksite injuries must be reported to the VA immediately using the VA accident reporting form (Number 2162). The COTR/Safety/or Security and Police Service will initiate the 2162.
- Patients and visitors may be anxious or irritated because of their situation. If you are faced with any patient or visitor that gets aggressive with you, simply call Ext. 42222 and say "Code Green" and describe the situation. Security will respond immediately.

R. Equipment Safety

- Ladders are not to be left unattended in public areas during breaks and lunch hours. Ladders shall be laid down and placed out of traffic areas during these periods.
- No tools, carts, ladders or other equipment are to be left unattended outside a secure area.
- Yellow safety barricades must be used when working in public areas.
- Use of hospital equipment is permitted only if the contractor receives permission from Facilities Service and is properly trained on the USC of the equipment.

S. Equipment and Supplies

- Caution must be used with all flammable materials, i.e., adhesives, thinners, varnishes, etc.
- All paints shall be low odor latex paint. The contractor will use odor reducing agents in all paints and solvents. Ventilation will be required if toxic or foul-smelling materials have to be applied.
- Only a one-day supply of paints, oils, and gas cylinders is permitted within the facility, unless it's properly stored in a flammable liquid storage cabinet.

T. Fire Alarm System

- Care must be exercised to prevent the accidental tripping of smoke detectors or fire alarms.
- Notify Facilities Service of your activities and location.
- Cover and protect the smoke alarms with paper bags when raising dust or creating smoke in short duration (less than 3 days) ancillary work areas. All other construction areas to follow section 01 01 10 – 1HR. (You must inform Facilities Service Fire Department when bagging smoke alarms.)
- Remove the paper bag upon completion of your work and at the end of each workday.
- If you accidentally trip an alarm, notify Facilities Service (Fire Department) immediately.

U. Hazardous Materials and Waste

- A listing of all hazardous materials that will be used on the job and their material safety data sheets (MSDS) will be provided to the VA before the chemicals are used.
- Any excess or used chemicals will be removed from the hospital promptly and properly disposed of by the contractor in accordance with federal, state and local regulations.
- Any hazardous waste generated at the facility must be properly contained and labeled and stored in accordance with local, state, federal and hospital regulations.
- Do not store flammable materials in the facility unless stored in an approved non-combustible storage cabinet or prior approval by the Project Engineer and Safety Office.

V. Heavy Lifting

- Hoisting heavy materials/items require prior review by the Project Engineer.

W. Housekeeping

- Housekeeping in public areas of the hospital will be maintained at the highest level, even while work is on going.
- In secured areas, housekeeping will be performed as needed, but at a minimum at the end of each job task, and at the end of the workday.
- Debris and waste will not be allowed to accumulate on the work site and disposal must be arranged to keep the amounts low.

X. Hot Work Permits

- Hot work permits are required before cutting, soldering, welding operations begin. Before any cutting, soldering or welding is conducted, the contractor or sub-contractor shall obtain permission through a hot work permit. The contractor shall be responsible for obtaining the hot work permits from the Project Engineer.
- Gas and oxygen canisters shall be properly chained and protected and two 10-pound fire extinguishers shall be present.
- A fire watch shall be maintained on the worksite during the hot work operations, and for 30 minutes after the hot work is completed.
- **All burn permits will be completed, signed and scanned within 48 hrs and posted to Buzzsaw.**

Y. Identification Badges

- ID Badges are required for all contractor employees working at the V.A.
- Before beginning work on any project, all outside contractors shall check obtain a VA contractor badge from the Police / Security Desk and obtain a contractors I.D. badge. The Contractor will complete the badge application and email it to the COTR, who will forward to the Police. The contractor will stop at the Police Desk 1-2 days later to complete the badge process. VA contractor badges are required for all contractors and consultants who will be onsite for more than (3) total days of the project. Temporary badges will be provided to the GC for contractors onsite for less than (3) days. The outside contractor will supply the following information: location of work site, authorization, duration, and any pertinent information that is required.

Z. Infection Control

- Reference section 01 01 10 IC.
- Sensitive/High Risk areas of the hospital require extra precautions to assure patient safety. These areas include but are not limited to the operating rooms, intensive care units, chemotherapy and transplant units. Contact infection control for other areas that may require special precautions.
- When working in patient care areas, please be sure to read and follow the directions listed on any Infection Control Precaution sheets posted outside of a patient's room. Generally this means permission must be obtained from Nursing staff before entry.
- Temporary walls or dust barriers are required to enclose areas under construction.
- Under some circumstances it may be necessary to block return and supply ducts, and install special HEPA exhaust ventilation from the worksite. There should be no re-circulation of air from construction area to rest of hospital.
- Dampened walk-off mats must be located outside of construction area.
- Dust mops/wet mops must be available to remove any dust tracked outside barriers.
- *Standard Precautions* assumes that any person may carry a contagious disease. In order to protect you from these diseases always assume blood, non-intact skin, mucous membranes and all other body fluids and excretions are infectious. Do not touch any such materials but contact a VA employee immediately. Needle container boxes are provided for the disposal of syringes and other sharps used in the medical center. These must be properly disposed of and should be moved only by VA personnel. The VA Medical Center provides written guidelines, education, and personal protective equipment (PPE) for anyone working at VA Medical Center campus to prevent their exposure to bloodborne pathogens.

AA. Interim Life Safety

- The hospital will document whether and to what extent Interim Life Safety Measures will be implemented for each project.
- VA Safety will ensure what interim life safety measures (ILSM) are required by the General Contractor to temporarily compensate for the hazards posted by existing Life Safety Code (LSC) deficiencies or construction activities in areas of the Medical Center.
- Implementation of ILSM will be required in or adjacent to all construction areas and throughout buildings with existing LSC deficiencies, ILSM applies to both construction workers and affected hospital employees, and will be implemented upon construction development and continuously enforced through construction completion.
- Almost always, Interim Life Safety Measures will require walkthrough inspections by the job foreman, the project manager, and safety staff at varying intervals.
- Training of workers and any affected staff will always be a significant part of the
- Interim Life Safety Measures procedures.

BB. Life Safety

- Any life safety code violations incurred during construction or renovation must be resolved and will result in close coordination with Project Engineer and Safety Section to implement the hospital's Interim Life Safety Measures. These measures are required by JCAHO and NFPA.

CC. Lock Out/Tag Out

- Lock Out/Tag Out - No contract worker is allowed to change the status/position of ANY switch, valve or any other energy source without prior approval from the Project Engineer. All Lock out/Tag Out activities need approval prior to being implemented. Any activity requiring a Lockout/Tagout process must comply with the hospital policy.
- Per OSHA Regulation 29 CFR 1910.147, all contractors must comply with OSHA's Safety Lockout/Tagout procedures.
- Coordinate all shut downs with Hospital Personnel.
- Only VA staff is authorized to shut down utilities unless permission is specifically granted.
- **Contractor to submit as a formal submittal the Lock Out / Tag Out Program policies and procedures.**

DD. Material Safety Data Sheets (MSDS)

- MSDS must be provided for any hazardous materials that you will be shipping or delivering to the VA Medical Center.
- MSDS are available for all materials used in the medical center. Contact the COTR if you need an MSDS for a VA owned material.
- See also Hazardous Materials and Wastes.

EE. Noise

- All core drilling, chipping, and hole drilling shall be done at a time and day determined by occupants on that floor and the floors above and below. The COTR shall coordinate and approve it.
- The patients, visitors, and staff deserve consideration and the quiet enjoyment of their premises. Anyone found being loud, rude, or otherwise annoying to the patients, their guests, or staff will be asked to leave the facility. Use of vulgar language will not be tolerated.
- All work activity within occupied portions of the facility shall be accomplished with minimal disruption to the patients, physicians, visitors, and staff.
- The playing of radios, tapes, and CD players is not permitted in any occupied area. "Walk-man" radios/tapes/CD players are not permitted anywhere.
- The playing of radios, tapes, and CD players is permitted in vacant areas but shall not be heard outside the vacant area.
- In inpatient areas, coordinate construction activities and debris removal with the Nurse Manager or Charge Nurse to minimize disruption.

FF. OSHA Compliance

- All contractors are subject to Occupational Safety and Health Administration (OSHA) regulations, these standards and are expected to enforce these standards in the performance of their work, OSHA regulations can be found in chapter 29 of the Code of Federal Regulations (CFR). Failure on the part of any contractor employee to comply with these standards and/or conduct their work in a safe fashion will result in an interruption in the work schedule for which the contractor will be solely responsible, Any contractor found deviating from regulatory standards and/or policy and SOPS will immediately be issued a stop work order and will be responsible for contractual conflicts related to the work stoppage.

GG. Parking

- Facilities Service Project Section will designate parking. Contractors may not block fire lanes or other roadways. Violators will be ticketed. During large construction projects, a staging site may be available for parking to contractors.
- All Contractors who need parking must contact Facilities Service for a parking permit.
- If special parking is required, permission shall be granted and coordinated through Facilities Management. Contractors should park in the designated Visitor parking areas. Limited loading and unloading will be permitted at the loading dock area, afterwards contractor employees will be required to park in designated areas.

II. Patient/Visitor Privacy

- Patient/Visitor Privacy. No construction staff is allowed to review, acknowledge or move any patient information or records.
- No construction staff may acknowledge any patient or visitor unless spoken to - even if the individual is known on a personal basis.

- Radios are NOT allowed on campus.
- Cell phones are to be used only in designated areas.

JJ. Personal Protective Equipment

- There are many situations that require specific personal protective equipment for worker safety according to OSHA. It is the responsibility of the individual contractor to know when it is to be used and is responsible to wear them.

KK. Restroom Usage

- Contractors are to use public restroom unless otherwise instructed to specific restrooms or portable facilities.

LL. Requests for Information

- All contractor requests for assistance and information shall be addressed to the Facilities Service Project Section or Facilities Service Department.

MM. Safety Regulations

- Contractors are expected to comply with all Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1926 and 1910.
- Work that is performed within a corridor or occupied space must be confined by dust barriers or non-combustible partitions.
- Appropriate job signs and barricades are to be placed in the area of construction to prevent occupants from straying into the job site.
- Stairwell doors shall not be propped open or blocked at any time. Equipment cannot be stored in the stairwells.
- All contractors are encouraged to frequently review these guidelines with their employees and/or subcontractors on site (e.g., during weekly Tool Box Safety Meetings).
- All contractors and their subcontractors are responsible for complying with these guidelines and all other conditions, OSHA requirements, and safety regulations.

NN. Scaffolding

- Prior to setup of all scaffolding, the contractor is to provide a submittal of the scaffolding design through the submittal review process. The scaffolding design is to be stamped by a professional engineer.
- Contractor to provide copies of daily scaffolding inspections with daily logs.

OO. Smoking

- The Smoking policy of the hospital is no smoking in any building nor within 50 feet of any the building entrance and only in areas designated for smoking. All construction employees must comply with this policy. A copy of the hospital smoking policy will be supplied at the pre-construction conference.
- Violation of the smoking policy will result in the worker being removed from the worksite for the duration of the project.
- The designated smoking areas are: Smoking Shelter located outside the East entrance
- Job site supervisors will enforce this smoking policy.

PP. Stop Work

- The hospital safety officer and COTR have the Director's permission and authority to stop work whenever conditions pose an imminent threat to life and health or threaten damage to equipment or buildings.

QQ. Subcontractors

- The general contractor has the responsibility to assure that all the subcontractors and their workers are properly trained and follow these safety guidelines. Assistance from VA staff will be providing on a case by case basis on technical issues.
- The VA reserves the right to approve of any subcontractor being used to complete a project.
- A worker on-site must be designated "in charge" at all times during the project.

RR. Traffic Control

- Contractors shall provide trained personnel and/or equipment, signage, barricades etc., to regulate traffic whenever construction operations affect traffic patterns.

SS. Trenching

- OSHA regulations must be followed during trenching operations.

TT. Waste Management

- Reference section 01 74 19.
- Trash, combustible waste, and excess construction materials must be removed daily to prevent accumulation. Contractors must arrange for the removal of their debris and waste. The building's dumpster shall not be used unless appropriate arrangements are made with Facilities Service.
- The contractor is encouraged to contact utilize our recycling program for the disposal of recyclables.
- The contractor is expected to comply with all environmental regulations.
- Contractor to provide a Fiscal Year breakdown of Waste Management/Recycling Costs on the project.

UU. Work Site Requirements

- All contractors are to maintain their work area as clean as possible while working and cleanup thoroughly every day.
- Prior to any utilities or critical systems being interrupted, a two weeks written notification to Facilities Management Project Engineer is mandatory. Only Facilities Management personnel will shut off a utility.
- All contractors are expected to use courtesy. Loud, vulgar, abusive language, sexual harrassment and aggressive behavior will not be tolerated.
- All contractors working above the ceiling are required to replace all disturbed ceiling tile by the end of each day.
- Prior to making any penetrations in walls, floors or ceilings, it is the contractor's responsibility to identify rated systems and be verified through review of as builts, line diagrams, etc.
- All repaired penetrations on rated systems must be completed using a fire rated material matching the rating of the system and must be inspected by the Project Engineer before ceiling tiles are replaced or area is concealed.
- Temporary construction partitions of non-combustible materials shall be installed as required to provide a smoke tight separation between the areas undergoing renovation and/or construction and adjoining areas that are occupied by the facility.
- Exits for occupied areas of the building including rooms, suites, corridors and floors shall not be blocked by the construction or by construction materials. Exit may be blocked temporarily if it is unavoidable and adequate alternative measures are provided, such as signage, instructions to occupants and approved in advance by the Project Engineer.
- Existing fire protection systems including fire alarm systems, smoke detection systems, and sprinkler systems shall not be altered except as required for the alteration and/or renovation project. Any alteration to the system shall be coordinated with Project Engineer. When sprinkler or fire and smoke detector systems are out of service for more than eight hours general contractor shall be responsible to institute a Fire Watch till systems are operational.
- At the end of each workday, combustible packaging and crating materials for building products and equipment to be installed shall be removed from the occupied building.
- It is the responsibility of each contractor to know exactly where the fire extinguishers and pull stations are in the areas they are working.
- Fire hazard inspections shall be conducted daily by the contractor once construction starts and until the work is turned back over to the facility.
- All temporary electrical wiring and equipment used for construction shall be installed and used in accordance with pertinent provisions of NFPA 70 and National Electrical Code.
- Contractor shall maintain construction site to permit access by the fire department as necessary. Clear building construction areas of obstructions so that all portions are accessible for fire department apparatus and permit emergency egress of patients and other personnel.
- All necessary precautions shall be taken by the contractor to prevent accidental operation of any existing smoke detectors by minimizing the amount of dust generated in the vicinity of any smoke detectors. Any activity that may generate dust or smoke shall be reviewed with the Project Engineer and the infectious control nurse.

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABLIZATION
VA PROJECT: 695-11-117

1.17 STANDARD REQUIRED FORMS

A. The following forms are required as noted below:

- a. Contractor's Checklist – Completed and signed by General Contractor
- b. Contractor's Impact Statement – Completed and signed by every contractor / subcontractor working on the project.
- c. Daily Log of Construction – Completed daily by General Contractor.
- d. Daily Intermediate Life Safety Measures (ILSM) Inspection Form – Completed daily by General Contractor.

CONTRACTOR CHECKLIST

This agreement is between _____ and _____
Project Name (ref. #) _____
Project Start Date _____ Ending Date _____
Work Allowed Between Hours _____ AM/PM and _____ AM/PM

Before performing any work on facility premises, outside contractors must read this checklist and comply with all local, state, federal and facility safety policies.

1.0 Life Safety Will the contractor compromise any part during the Life Safety System of this facility (ceiling tiles, penetrations in smoke or fire walls, blocking exits, shutting down fire/smoke detection or fire suppression, etc.) **Y N**
Describe. _____

1.1 Is Interim Life Safe necessary? **Y N**, if yes, attach and follow interim plan.

2.0 Services Will there be any compromises to patient services during the work performed? **Y N**

2.1 What adjustments need to be implemented to minimize impact to residents, visitors and staff? **Y N** _____

3.0 Chemical Will hazardous chemicals (liquids or gases) be used on-site? **Y N**
If yes, what risks do they create for facility staff? Is there any chance of exposure? _____

3.1 Are there any facility chemicals being used, stored or handled where the contractor will be working? **Y N**

If yes, has the contractor been informed by issuing MSDS's? **Y N**

4.0 "Hot Work": Will the contractor use equipment which will generate open flames, sparks or other ignition sources **Y N**

4.1 Will flammable chemicals be in the area? **Y N**

4.2 Will a **Fire Watch** be necessary to be posted during all Hot Work activities? **Y N**

5.0 Confined Spaces: Does the work involve entry into a confined space? **Y N**
If yes, retain a copy of contractor's Confined Space Entry program (and CSE Permit if needed).

6.0 Lockout/Tagout : Does the work involve maintenance on energized equipment or systems? **Y N** (If yes, retain a copy of the contractor's LOCKOUT/TAGOUT program)

6.1 Is there any impact to residents, visitors, or staff during this procedure? **Y N**
If so, describe the impact, ways to minimize the impact and who has been notified. _____

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI
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VA PROJECT: 695-11-117

DEPARTMENT OF VETERANS AFFAIRS

7.0 Unsafe Conditions/ Impact to Residents, Visitors and Staff Are there any unusual or unsafe conditions which need to be addressed and/or communicated to facility staff, visitors or residents? ? Y N

Describe. _____

8.0 Description of Work Area The departments/areas you will be working are

List: _____

8.1 The potential hazards to you/your workers in the areas you are working in

List _____

8.2 The specific problems that can be caused by the wrong actions in the areas you are working

List _____

9.0 Contractor's Employees

Safety Officer Contact _____

Facility Project Manager _____

First Aid Plan _____

Fire Plan _____

Disaster Plan _____

Restricted Areas _____

10.0 Restricted Areas

The following are the areas of the hospital where construction workers are allowed to go in the hospital.

List _____

(Contractor Representative)

Date: _____

(Facility Project Manager)

Date: _____

Contractor's Impact

System	Possible Interruption	Possible Effect to Patients
Electrical	<ul style="list-style-type: none"> - Changing position of switches and breakers - Cutting or splicing into wires - Disconnecting wires or terminals - Disturbing Junction Boxes/Electrical Panels - Core Drilling - Demolition of walls - Excavation 	Electrical Systems provides LIFE SUPPORT (Directly and Indirectly) <ul style="list-style-type: none"> - Can cause DEATH to critical patients
Water Lines	<ul style="list-style-type: none"> - Turning valves - Cutting into lines - Demolition & Excavation 	Dialysis, OR, HVAC, ICU, X Ray, etc Can cause DEATH to critical patients Infection Control issues Major Cleanup issues
Medical Gases: Oxygen Air Vacuum Nitrous Oxide Nitrogen	<ul style="list-style-type: none"> - Cutting or disturbing into lines (labeled, unlabeled) - Changing valve positions - Deactivating alarms - Demolition & Excavation 	Oxygen, vacuum, air, etc. ICU, OR, Med/Surg. Can cause DEATH to critical patients
HVAC	<ul style="list-style-type: none"> - Shutting down - Modifying - Changing controls - Cutting into the roof - Producing foul odors near intakes - Cutting into chilled water lines - Obstruct fresh air intake 	Temperature is critical in OR, ICU, etc. Infection Control issues Major Air Quality Issues
Fire Alarm and Sprinklers	<ul style="list-style-type: none"> - ANY modifications - covering or removing smoke heads - Demolition & Excavation - Damage or set off sprinkler heads - Duct work modifications 	<ul style="list-style-type: none"> - Compromising Fire Safety - False Alarms - Floods - Major disruptions and distractions ALL THE ABOVE CAN RESULT IN DEATH
Code Alarms Nurse Call Wander Guards	<ul style="list-style-type: none"> - Demolition & Excavation - Unplugging - Changing position of switches/breakers 	Lack of communicating system can result in patient death or injury

IF THERE IS ANY QUESTION REGARDING ANY OF THE INFORMATION ON THIS DOCUMENT, IMMEDIATELY CONTACT FACILITY MANAGEMENT OR SAFETY OFFICE TO RESOLVE ISSUES PRIOR TO WORK COMMENCEMENT.

Contract Company: _____

Receipt Acknowledged: _____

Signature: _____

Date: _____

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DEPARTMENT OF VETERANS AFFAIRS

DAILY LOG OF CONSTRUCTION

M T W Th F Pkg. No.:

PROJECT:

BUILDING

CONTRACT NO.
V69DC-

DATE

CONTRACTOR

CONTRACTOR REPRESENTATIVE ON JOB

WEATHER (*Rain, Snow, Cloudy, Windy, etc., OR NA if all indoors*)

TEMP.

High

Low

SITE CONDITIONS (*CLEAN, DEBRIS, DUST, ETC.*)

NO. CONTRACTOR'S MEN BY JOB CATEGORIES

NO. SUBCONTRACTOR'S MEN BY JOB CATEGORIES

EQUIPMENT ON JOB

Brief description of size

No.
Units

Working
Yes No

MATERIALS DELIVERED

OFFICIAL VISITORS TO JOB SITE

STATUS OF WORK

ITEM NO. Brief description of work in progress, questionable performance, unforeseen developments on job etc. Include tests made and samples taken.

STATUS OF INFECTIOUS CONTROL MEASURES (NEGATIVE AIR FLOW, CLEAN WALK OFF MAT, ANTE-ROOM SECURE,...)

NEGATIVE AIR FLOW PRESSURE READING: _____

SAFETY COMMENTS

DIFFICULTIES WITH CONTRACTOR OR REPRESENTATIVE

UNFORESEEN DEVELOPMENTS ON JOB CONTINUED (*Describe conditions, action taken, person contacted, recommended actions*)

SIGNATURE

TITLE

PROJECT SUPERINTENDENT

FORM QCA-01A

SPECIAL NOTES

01 01 10 – SN - 20

Daily Intermediate Life Safety Measures (ILSM) Inspection Form

INSTRUCTIONS: This form is to be utilized when significant hazards posed by existing NFPA 101 deficiencies or construction activities are in progress. ILSM must be implemented upon project start and continuously enforced through project completion to provide a level of life safety comparable to that described in Chapter 1-7, 31 and applicable occupancy chapters of the Life Safety Code. WHERE APPLICABLE NOTE EXCEPTIONS ONLY OF AREA IDENTIFIED AS BEING DEFICIENT DURING INSPECTION AND EXPLAIN IN SUFFICIENT DETAIL IN THE COMMENTS SECTION OF THIS FORM. TURN COMPLETED FORMS INTO THE LHS SAFETY OFFICER.

PROJECT:	DATE	MON	TUE	WED	THR	FRI	SAT	SUN
1. Are exits readily accessible and provide unobstructed egress?								
2. If required, due to inaccessibility of existing, have alternate exits been established?								
3. If alternate exists have been established, are personnel in the area informed and aware of their relocation and existence?								
4. Are the existing and relocation exits clearly identified and able to be seen in the event of an emergency or fire?								
5. Are fire evacuation routes posted and do they reflect up-to-date changes and alternate escape routes due to construction deficiencies?								
6. Are written procedures and guidelines posted in the immediate and adjacent areas for what to do and who to call in the event of fire or emergency?								
7. Are personnel in the immediate and adjacent areas aware and informed as to the procedures and guidelines to follow in the event of fire or emergency?								
8. Do fire alarms, detection, and suppression equipment and systems appear to be operational?								
9. If the fire alarm or suppression systems are impaired or temporarily made nonfunctional has a fire watch, as required or necessary, of the area been established?								
10. If the existing fire alarm or suppression systems/equipment are impaired, have measures been taken to provide equivalent equipment/systems for adequate protection? Note date of installation for equivalent measures to the right.								
11. If the fire alarm or suppression systems are impaired, are the temporary equipment/systems being inspected and tested at least monthly?								
12. If temporary fire alarm or suppression systems are installed, are personnel in the area aware and informed on how to operate or utilize in the event of fire or emergency?								
13. Has the LHS "No Smoking" policy been posted, implemented and enforced in the construction area?								
14. Are construction/remodel area storage, waste and debris being maintained to minimize potential for fire or safety hazards during daily operations?								

Daily Intermediate Life Safety Measures (ILSM) Inspection Form (Continued)

PROJECT:	DATE	MON	TUE	WED	THR	FRI	SAT	SUN
15. Are temporary partitions built to be smoke tight and of noncombustible/fire retardant materials to minimize spread of smoke or fire within the building?								
16. Do electrical panels, temporary wiring, extension cords, tools and equipment appear to be installed, utilized, and functioning in a safe manner?								
17. In general, are the exterior construction site, buildings, and ground free of hazard and potential safety violations?								
18. If there is any gas/arc welding or cutting being performed within the building or on site, have additional fire safety precautions been taken and the necessary equipment provided and utilized?								
19. If there is any gas/arc welding or cutting being performed within the building or on site, has the Plant Operations department been notified?								
20. If there are hand and safety rails required, are they in place and maintained in good condition?								
21. Are extension cords that are being used a 3 wire grounded type?								
22. If there are temporary electrical outlets provided, do they have ground fault protection at the receptacle or at the panel?								
23. If hazardous chemicals are present and/or being used, are they being limited to the amount needed and used daily?								
24. Are MSDS sheets readily available for any hazardous chemicals that are present or being used?								
25. Do ladders and scaffolds appear to be in satisfactory condition and being utilized in a safe manner?								
26. Is personnel protective equipment, such as safety glasses, hard hats and etc. needed or required and being used?								
27. If infection control is required, are the appropriate policies and procedures known and being followed?								
28. If electrical equipment needs to be de-energized, are applicable "Lockout/Tagout" procedures being followed?								
PLACE INITIALS OF PERSON PERFORMING DAILY INSPECTION TO THE RIGHT.								

INSPECTION COMMENTS/FINDINGS: _____

DATE PROJECT STARTED _____ DATE PROJECT COMPLETED _____

PROJECT CE #: _____ GENERAL CONTRACTOR _____

AREAS(S) OF PROJECT/JOB INSPECTED _____

SECTION 01 32 16.13
NETWORK ANALYSIS SCHEDULES

PART 1- GENERAL

1.1 DESCRIPTION:

- A. The Contractor shall develop a Network Analysis System (NAS) plan and schedule demonstrating fulfillment of the contract requirements, shall keep the network up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) Precedence Diagramming Method (PDM) technique will be utilized to satisfy both time and cost applications. All schedule data and reports required under this specification section shall be based upon regular total float, not relative total float schedules.

1.2 CONTRACTOR'S REPRESENTATIVE:

- A. The Contractor shall designate an authorized representative in the firm who will be responsible for the preparation of the network diagram, review and report progress of the project with and to the Contracting Officer's representative.
- B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification section and such authority shall not be interrupted throughout the duration of the project.

1.3 CONTRACTOR'S CONSULTANT:

- A. To prepare the network diagram, and compact disk(s), which reflects the Contractor's project plan, the Contractor shall engage an independent CPM consultant who is skilled in the time and cost application of scheduling using (PDM) network techniques for construction projects, the cost of which is included in the Contractor's bid. This consultant shall not have any financial or business ties to the Contractor, and shall not be an affiliate or subsidiary company of the Contractor, and shall not be employed by an affiliate or subsidiary company of the Contractor.
- B. With the initial response to the RFP the Contractor shall submit to the Contracting Officer:

1. The name and address of the proposed consultant.
 2. Sufficient information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
 3. A list of prior construction projects, along with selected PDM network diagram samples on current projects which the proposed consultant has performed complete project scheduling services. These network diagram samples must show complete project planning for a project of similar size and scope as covered under this contract.
- C. The Contracting Officer has the right to approve or disapprove employment of the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of information. In case of disapproval, the Contractor shall resubmit another consultant within 10 calendar days for renewed consideration. The Contractor must have their CPM Consultant approved prior to submission of their best and final offer.

1.4 COMPUTER PRODUCED SCHEDULES

- A. The contractor shall provide to the VA, Senior Resident Engineer and CPM Schedule Analyst, monthly computer processing of all computer-produced time/cost schedules and reports generated from monthly project updates. This monthly computer service will include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P3 or P6) to the contracting officer's representative; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data in Primavera (P3 or P6) batch format; and the resulting monthly updated schedule in a compressed electronic file in Primavera (P3 or P6), (PDM) format. These must be submitted with and substantively support the contractor's monthly payment request and the signed lookahead report. The resident engineer shall identify the five different report formats that the contractor shall provide based upon the monthly schedule updates.
- B. The contractor is responsible for the correctness and timeliness of the computer-produced reports. The Contractor is also responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.

- C. The VA shall report errors in computer-produced reports to the Contractor's representative within ten calendar days from receipt of reports. The Contractor will reprocess the computer-produced reports and associated compact disk(s), when requested by the Contracting Officer's representative, to correct errors which affect the payment and schedule for the project.

1.5 THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL

- A. Within 45 calendar days (60 calendar days on projects over \$50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; three blue line copies of the complete network diagram on sheets of paper 765 x 1070 mm (30 x 42 inches) and an electronic file in a compressed Primavera (P3 or P6), (PDM) format. The submittal shall also include three copies of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, duration, predecessor and successor relationships, trade code, area code, description, budget amount, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start and start-to-start without lead or lag constraints. The lead or lag for the SS relationships may only be allowed in limited basis if justified in writing and must be approved by the Contracting Officer. Activity/event date constraints, not required by the contract, will not be accepted unless submitted to and approved by the Contracting Officer. The contractor shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer's written approval before incorporating them into the network diagram. The Contracting Officer's separate approval of the network diagram shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events, but must have a zero duration. The complete working network diagram shall reflect the Contractor's approach to scheduling the complete project. **The final network diagram in its original form shall contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the entire**

contract duration as defined in the bid documents. These changes/delays shall be entered at the first update after the final network diagram has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

- B. Within 30 calendar days after receipt of the complete project network diagram, the Contracting Officer or his representative, will do one or both of the following:
 - 1. Notify the Contractor concerning his actions, opinions, and objections.
 - 2. A meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 14 calendar days after the joint review, the Contractor shall revise and shall submit three blue line copies of the revised network diagram, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the Contracting Officer. The revised submission will be reviewed by the Contracting Officer and, if found to be as previously agreed upon, will be approved.
- C. The approved baseline network diagram schedule and the corresponding computer-produced schedule(s) shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.
- D. The Complete Project Network Diagram will contain approximately 30 to 40 work activities/events.

1.6 WORK ACTIVITY/EVENT COST DATA

- A. The Contractor shall cost load all work activities/events except procurement activities. The cost loading shall reflect the appropriate level of effort of the work activities/events. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the Contracting Officer to

assist him in determining approval or disapproval of the cost loading. In the event of disapproval, the Contractor shall revise and resubmit in accordance with Article, THE COMPLETE PROJECT NETWORK DIAGRAM SUBMITTAL. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.

- B. The Contractor shall cost load work activities/events for guarantee period services, test, balance and adjust various systems in accordance with the provisions in the FAR 52.232 - 5 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), Article, and VAAR 852.236 - 83(PAYMENTS UNDER FIXED-PRICE CONSTRUCTION).
- C. In accordance with Article PERFORMANCE OF WORK BY THE CONTRACTOR in FAR 52.236 - 1 and VAAR 852.236 - 72, the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events of the project for which the Contractor's forces will perform the work.
- D. The Contractor shall cost load work activities/events for ASBESTOS ABATEMENT. The sum of asbestos abatement work activity/event costs shall equal the value of the asbestos bid item in the Contractors' bid.
- E. The Contractor shall cost load work activities/events for all BID ITEMS. The sum of the cost loading for each bid item work activities/events shall equal the value of the item in the Contractors' bid.
- F. Work activities/events for Contractor bond shall have a trade code and area code of BOND.

1.7 NETWORK DIAGRAM REQUIREMENTS

- A. Show on the network diagram the sequence and interdependence of work activities/events required for complete performance of all items of work. In preparing the network diagram, the Contractor shall:
 - 1. Exercise sufficient care to produce a clear, legible and accurate network diagram, refer to the drawing, CPM-1 (Sample CPM Network). Computer plotted network diagrams shall legibly display and plot all information required by the VA CPM activity/event legend or the computer plotted network diagram will not be acceptable. If the computer plotted network diagram is not found acceptable by the contracting officer's representative, then the network diagram will need to be hand drafted and meet legibility requirements. Group

activities related to specific physical areas of the project, on the network diagram for ease of understanding and simplification.

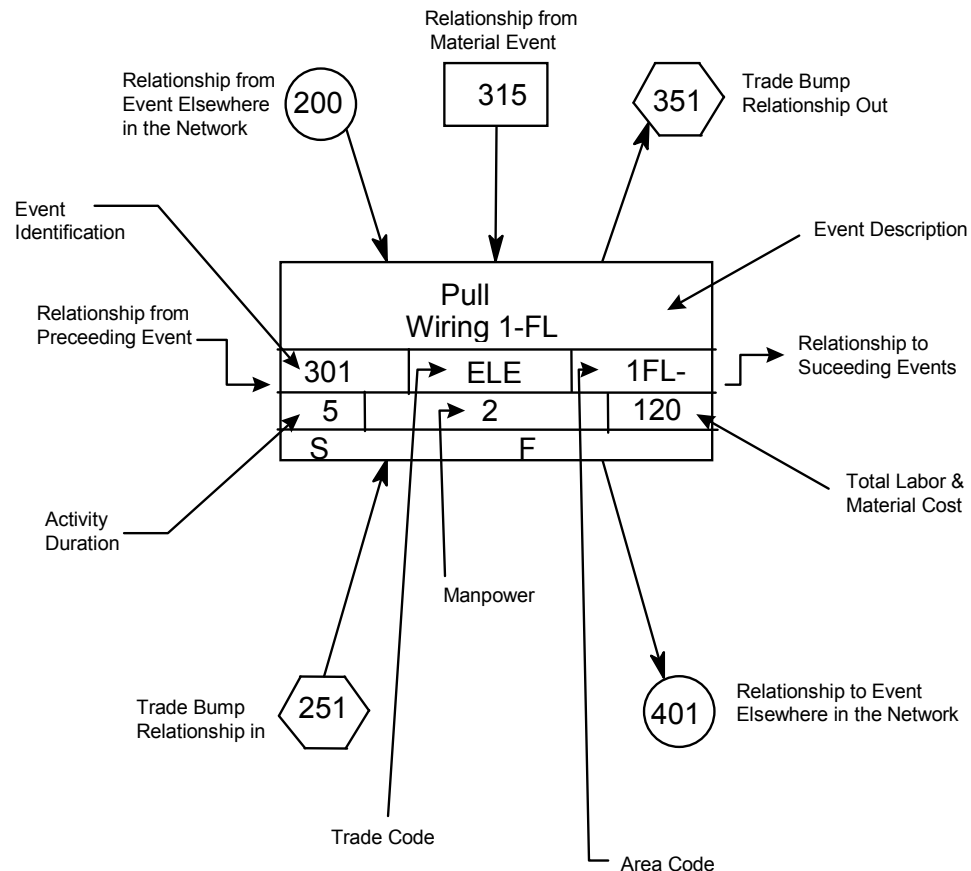
Provide a key plan on each network diagram sheet showing the project area associated with the work activities/events shown on that sheet.

2. Show the following on each work activity/event:
 - a. Activity/Event ID number.
 - b. Concise description of the work represented by the activity/event. (35 characters or less including spaces preferred).
 - c. Performance responsibility or trade code (five alpha characters or less): GEN, MECH, ELEC, CARP, PLAST, or other acceptable abbreviations.
 - d. Duration (in work days.)
 - e. Cost (in accordance with Article, ACTIVITY/EVENT COST DATA of this section and less than \$9,999,999 per activity).
 - f. Work location or area code (five characters or less), descriptive of the area involved.
 - g. Manpower required (average number of men per day).
 - h. The SYMBOL LEGEND format shown below and on the drawing, CPM-1 (Sample CPM Network) is mandatory and shall be followed in

preparing final network diagrams.

SYMBOL LEGEND

Show Network Diagram page number location(s) for all incoming/outgoing node connector(s).



3. Show activities/events as:

- Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
- Contracting Officer's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
- Interruption of VA Medical Center utilities, delivery of Government furnished equipment, and rough-in drawings, project phasing and any other specification requirements.

- d. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.
 - e. VA inspection and acceptance activity/event with a minimum duration of five work days at the end of each phase and immediately preceding any VA move activity/event required by the contract phasing for that phase. Schedule these activities/events so that only one phase is scheduled for completion within the same 30 consecutive calendar day period (except for those phases immediately preceding the final acceptance). Maintain this scheduling condition throughout the length of the contract unless waived by the Contracting Officer's representative in writing.
 - f. Work activities/events for the asbestos abatement bid item shall have a trade code of ASB.
 - g. Bid items other than the Base Bid (ITEM 1) and Asbestos Abatement item shall have trade codes corresponding to the appropriate bid item number (e.g., ITM 3, ITM 4 and other items).
4. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.
5. Break up the work into activities/events of a duration no longer than 20 work days each, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the Contracting Officer may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals shall not be less than 20 work days. Refer to drawing CPM-1 for VA approval activities/events which will require minimum duration longer than 20 workdays. The construction time as determined by the CPM schedule from early start to late finish for any sub-phase, phase or the entire project shall not exceed the contract time(s) specified or shown.

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6. Describe work activities/events clearly, so the work is readily identifiable for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
 7. Uniquely number each activity/event with numbers ranging from 1 to 99998 only. The network diagram should be generally numbered in such a way to reflect either discipline, phase or location of the work.
- B. Submit the following supporting data in addition to the network diagram, activity/event ID schedule and electronic file (s). Failure of the Contractor to include this data will delay the review of the submittal until the Contracting Officer is in receipt of the missing data:
1. The proposed number of working days per week.
 2. The holidays to be observed during the life of the contract (by day, month, and year).
 3. The planned number of shifts per day.
 4. The number of hours per shift.
 5. List the major construction equipment to be used on the site, describing how each piece relates to and will be used in support of the submitted network diagram work activities/events.
 6. Provide a typed, doubled spaced, description, at least one page in length, of the plan and your approach to constructing the project.
- C. To the extent that the network diagram or any revised network diagram shows anything not jointly agreed upon, it shall not be deemed to have been approved by the Contracting Officer. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the Contracting Officer's approval of the network diagram.
- D. Compact Disk Requirements and CPM Activity/Event Record Specifications: Submit to the VA (Senior resident Engineer and CPM Schedule Analyst) an electronic file(s) containing one file of the data required to produce a Primavera (P3 or P6), (PDM) produced schedule, reflecting all the activities/events of the complete project network diagram being submitted.

1.8 PAYMENT TO THE CONTRACTOR:

- A. Monthly, the contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article FAR 52.232 - 5 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION), and VAAR 852.236 - 83(PAYMENTS UNDER FIXED-PRICE CONSTRUCTION). The Contractor is entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated computer-produced calendar-dated schedule unless, in special situations, the Contracting Officer permits an exception to this requirement. Monthly payment requests shall include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of Primavera (P3 or P6), (PDM) to the contracting officer's representative; a listing of all project schedule changes, and associated data, made at the update; and an electronic file (s) of the resulting monthly updated schedule in a compressed Primavera (P3 or P6), (PDM) format. These must be submitted with and substantively support the contractor's monthly application and certificate for payment request documents.
- B. When the Contractor fails or refuses to furnish to the Contracting Officer the information and the associated updated Primavera (P3 or P6), (PDM) schedule in electronic format, which, in the sole judgment of the Contracting Officer, is necessary for processing the monthly progress payment, the Contractor shall not be deemed to have provided an estimate and supporting schedule data upon which progress payment may be made.

1.9 PAYMENT AND PROGRESS REPORTING

- A. Monthly job site progress meetings shall be held on dates mutually agreed to by the Contracting Officer (or Contracting Officer's representative) and the Contractor. Contractor and the CPM consultant will be required to attend all monthly progress meetings. Presence of Subcontractors during progress meeting is optional unless required by the Contracting Officer (or Contracting Officer's representative). The Contractor shall update the project schedule and all other data required by this section shall be accurately filled in and completed

prior to the monthly progress meeting. The Contractor shall provide this information to the Contracting Officer or the VA representative in completed form three work days in advance of the progress meeting. Job progress will be reviewed to verify:

1. Actual start and/or finish dates for updated/completed activities/events.
 2. Remaining duration, required to complete each activity/event started, or scheduled to start, but not completed.
 3. Logic, time and cost data for change orders, and supplemental agreements that are to be incorporated into the network diagram and computer-produced schedules. Changes in activity/event sequence and duration which have been made pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.
 4. Percentage for completed and partially completed activities/events.
 5. Logic and duration revisions required by this section of the specifications.
 6. Activity/event duration and percent complete shall be updated independently.
- B. The Contractor shall submit a narrative report as a part of his monthly review and update, in a form agreed upon by the Contractor and the Contracting Officer. The narrative report shall include a description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities/events and completion dates; and an explanation of corrective action taken or proposed. This report is in addition to the daily reports pursuant to the provisions of Article, DAILY REPORT OF WORKERS AND MATERIALS in the GENERAL CONDITIONS.
- C. After completion of the joint review and the Contracting Officer's approval of all entries, the contractor will generate an updated computer-produced calendar-dated schedule and supply the Contracting Officer's representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified.
- D. After completing the monthly schedule update, the contractor's scheduling consultant shall rerun all current period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and resident engineer for the contract change(s).

When there is a disagreement on logic and/or durations, the consultant shall use the schedule logic and/or durations provided and approved by the resident engineer. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the resident engineer within fourteen (14) calendar days of completing the regular schedule update. **Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.**

- E. After VA acceptance and approval of the final network diagram, and after each monthly update, the contractor shall submit to the Contracting Officer three blue line copies of a revised complete network diagram showing all completed and partially completed activities/events, contract changes and logic changes made on the intervening updates or at the first update on the final diagram. The Contracting Officer may elect to have the contractor do this on a less frequent basis, but it shall be done on a quarterly basis as a minimum.
- F. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Consultant, RE office representatives, and all subcontractors needed, as determined by the SRE, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the

project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

1.10 RESPONSIBILITY FOR COMPLETION

- A. Whenever it becomes apparent from the current monthly progress review meeting or the monthly computer-produced calendar-dated schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
 - 1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
 - 2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
 - 3. Reschedule the work in conformance with the specification requirements.
- B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the Contracting Officer for the proposed schedule changes. If such actions are approved, the CPM revisions shall be incorporated by the Contractor into the network diagram before the next update, at no additional cost to the Government.

1.11 CHANGES TO NETWORK DIAGRAM AND SCHEDULE

- A. Within 30 calendar days after VA acceptance and approval of any updated computer-produced schedule, the Contractor will submit a revised network diagram, the associated compact disk(s), and a list of any activity/event changes including predecessors and successors for any of the following reasons:
 - 1. Delay in completion of any activity/event or group of activities/events, indicate an extension of the project completion by 20 working days or 10 percent of the remaining project duration, whichever is less. Such delays which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.
 - 2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.

3. The schedule does not represent the actual prosecution and progress of the project.
 4. When there is, or has been, a substantial revision to the activity/event costs of the network diagram regardless of the cause for these revisions.
- B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Medical Center, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, must be furnished in writing to the Contracting Officer for approval.
- C. Contracting Officer's approval for the revised network diagram and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.
- D. The cost of revisions to the network diagram resulting from contract changes will be included in the proposal for changes in work as specified in Article, FAR 52.243 -4 (CHANGES), VAAR 852.236 - 88 (CHANGES - SUPPLEMENTS), and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.
- E. The cost of revisions to the network diagram not resulting from contract changes is the responsibility of the Contractor.

1.12 ADJUSTMENT OF CONTRACT COMPLETION

- A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the Contracting Officer may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in this request. The Contracting Officer's determination as to the total number of days of contract extension will be based upon the current computer-produced

calendar-dated schedule for the time period in question and all other relevant information.

- B. Actual delays in activities/events which, according to the computer-produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer's decision.
- C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under Article, FAR 52.243 -4 (CHANGES), VAAR 852.236 - 88 (CHANGES - SUPPLEMENTS). The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in work days) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.
- D. All delays due to non-work activities/events such as RFI's, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis.

1.13 CONSTRUCTION SCHEDULE RISK ANALYSIS / MITIGATION PLAN

- A. Schedule Risk Analysis - The contractor shall conduct the statistical schedule risk analysis based on the above detailed construction activities in the Day 1 approved diagram, identifying major schedule risk areas and recommended risk mitigation plans as outlined below.
- B. The risk analysis shall be conducted by a person or firm skilled in the statistical method of schedule risk analysis based on the (PDM) network techniques for major construction projects, preferably in the major health care related projects. The cost of this service shall be included in the Contractor's proposal.
- C. The Contracting Officer has the right to approve or disapprove the Person or firm designated to perform the risk analysis.

1.14 RISK ANALYSIS FORMAT / REQUIREMENTS / SUBMITTALS

- A. Risk Analysis Software / Format - Within 45 calendar days (60 calendar days on projects over \$50,000,000) after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; a

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Risk Analysis software to be utilized, the method of performing the analysis, the format of presenting the data and the reports for VA approval.

- B. Conduct Risk Analysis / **Submittals - Based on the approved software / format, the consultant shall** perform statistical risk analysis on the detailed approved Day 1 diagram. The contractor shall review and utilize any previous Risk analysis performed by the A/E of record based on the "semi-detailed" (yet at an overall level) construction logic and schedule to ensure the continuity of previous schedule risk analysis. The contractor's project manager and Superintendent shall identify the major schedule risk areas and possible risk mitigation strategy/plan and record it in a narrative format, with **electronic file submission** to the VA. **The risk analysis exercise shall be performed or updated at least on a quarterly basis or as directed by the VA Contracting officer.**
- C. The submittal shall include three copies of a computer-produced risk analysis results, predicting the various meaningful probability curves of achieving the contract schedules. It shall also include a detailed narrative list of all major and minor potential and specific schedule and cost risk areas, and a contractor's recommendations of mitigating the identified risks which must be addressed by the VA Project and Resident engineer teams to maintain the contract schedule.

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SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- 1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.
- 1-2. For the purposes of this contract, samples, test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.
- 1-3. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:
 - A. Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;
 - B. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
 - C. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.
- 1-4. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable to untimely and rejected submittals will not serve as a basis for extending contract time for completion.
- 1-5. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by Resident Engineer on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, Architect-Engineer will assign a file number thereto. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.
- 1-7. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional

submittals beyond those required by the contract are furnished pursuant to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

- 1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect-Engineer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.
- 1-9. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.
 - A. Submit samples of interior finish materials, in quadruplicate. Submit other samples in single units unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.
 - B. Submittals will receive consideration only when stamped and signed by the contractor and covered by a transmittal letter signed by Contractor. Letter shall be sent via first class mail and shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.
 1. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.
 2. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center, name of Contractor, manufacturer, brand,

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contract number and ASTM or Federal Specification Number as applicable and location(s) on project.

3. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.
- C. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.
- D. Approved samples will be kept on file by the Resident Engineer at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.
- E. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
 1. For each drawing required, submit one legible photographic paper or vellum reproducible.
 2. Reproducible shall be full size.
 3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
 4. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.
 5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
 6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.

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7. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.
- 1-10. Samples, shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to

Chequamegon Bay Engineering

1109 N. Mayfair Rd, Suite 208

Milwaukee, WI, 53226

- 1-11. At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the complete submittal directly to the Resident Engineer.

1-12. Architectural Submittals List (Note: Not all may be applicable)

- A. Hydraulic cement underlayment
- B. Metal fabrications
- C. Finish carpentry
 - 1. Cabinets
 - 2. Finish materials
- D. Thermal insulation: Each type
- E. Firestopping: Each type
- F. Joint sealants: Each type
- G. Expansion joint covers: Each type
- H. Hollow metal doors and frames
- I. Interior wood doors
- J. Access doors and frames
- K. Door hardware: Each product required.
- L. Low energy power assist door operators
- M. Glazing
 - 1. Glass
 - 2. Sealants
 - 3. Integral blind windows
 - 4. Glazing film
- N. Louvers and vents
- O. Non-structural metal framing
- P. Gypsum board
 - 1. Gypsum board, each type
 - 2. Accessories
 - 3. Adhesives
 - 4. Finishing materials
- Q. Ceramic tiling
 - 1. Tile
 - 2. Leveling compound
 - 3. Waterproof membrane
 - 4. Mortar
 - 5. Grout
- R. Acoustical ceilings
 - 1. Suspension system
 - 2. Acoustical units
- S. Resilient base and accessories
 - 1. Base
 - 2. Adhesives
- T. Resilient sheet flooring

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- 1. Flooring
 - 2. Cap and fillet strips
 - 3. Edge strips
 - 4. Adhesives
 - U. Resilient tile flooring
 - 1. Tile
 - 2. Adhesive
 - V. Carpeting
 - 1. Carpet
 - 2. Transition strips
 - 3. Adhesives
 - W. Vinyl-coated fabric wall coverings
 - 1. Wall coverings
 - 2. Adhesives
 - X. Painting: Each finish required
 - Y. Visual display units: Each product required
 - Z. Signage: Each type required
 - AA. Cubicle curtain tracks
 - 1. Curtain tracks
 - 2. Fabrics
 - BB. Patient bed service walls
 - 1. Headwall units
 - 2. Bed locators
 - CC. Wall and door protection
 - 1. Crash rails
 - 2. Corner guards
 - 3. Impact resistant wall covering
 - DD. Toilet and bath accessories
 - 1. Grab bars.
 - 2. Shower curtain rods.
 - 3. Clothes hooks, robe or coat.
 - 4. Towel bars.
 - 5. Metal framed mirror.
 - 6. Stainless steel shelves.
 - 7. Folding shower seats.
 - EE. Fire extinguisher cabinets
 - FF. Metal lockers
 - GG. Miscellaneous equipment: Each product required
 - HH. Ceiling mounted patient lift system
 - II. Window shades
 - JJ. Modular furniture: Each product required.
 - KK. Aquarium: Each component required
 - LL. Pneumatic tube system
- 1-13. MEP Submittals List (NOT APPLICABLE)

- - - E N D - - -

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI
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DEPARTMENT OF VETERANS AFFAIRS

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the availability and source of references and standards specified in the project manual under paragraphs APPLICABLE PUBLICATIONS and/or shown on the drawings.

1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29 (FAR 52.211-1) (AUG 1998)

- A. The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29 and copies of specifications, standards, and commercial item descriptions cited in the solicitation may be obtained for a fee by submitting a request to - GSA Federal Supply Service, Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.
- B. If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.

1.3 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-4) (JUN 1988)

The specifications and standards cited in this solicitation can be examined at the following location:

DEPARTMENT OF VETERANS AFFAIRS
Office of Construction & Facilities Management
Facilities Quality Service (00CFM1A)
425 Eye Street N.W, (sixth floor)
Washington, DC 20001
Telephone Numbers: (202) 632-5249 or (202) 632-5178
Between 9:00 AM - 3:00 PM

1.4 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-3) (JUN 1988)

The specifications cited in this solicitation may be obtained from the associations or organizations listed below.

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AA	Aluminum Association Inc. http://www.aluminum.org
AABC	Associated Air Balance Council http://www.aabchg.com
AAMA	American Architectural Manufacturer's Association http://www.aamanet.org
AAN	American Nursery and Landscape Association http://www.anla.org
AASHTO	American Association of State Highway and Transportation Officials http://www.aashto.org
AATCC	American Association of Textile Chemists and Colorists http://www.aatcc.org
ACGIH	American Conference of Governmental Industrial Hygienists http://www.acgih.org
ACI	American Concrete Institute http://www.aci-int.net
ACPA	American Concrete Pipe Association http://www.concrete-pipe.org
ACPPA	American Concrete Pressure Pipe Association http://www.acppa.org
ADC	Air Diffusion Council http://flexibleduct.org
AGA	American Gas Association http://www.aga.org
AGC	Associated General Contractors of America http://www.agc.org
AGMA	American Gear Manufacturers Association, Inc. http://www.agma.org
AHAM	Association of Home Appliance Manufacturers http://www.aham.org
AISC	American Institute of Steel Construction http://www.aisc.org
AISI	American Iron and Steel Institute http://www.steel.org
AITC	American Institute of Timber Construction http://www.aitc-glulam.org
AMCA	Air Movement and Control Association, Inc. http://www.amca.org

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ANLA	American Nursery & Landscape Association http://www.anla.org
ANSI	American National Standards Institute, Inc. http://www.ansi.org
APA	The Engineered Wood Association http://www.apawood.org
ARI	Air-Conditioning and Refrigeration Institute http://www.ari.org
ASAE	American Society of Agricultural Engineers http://www.asae.org
ASCE	American Society of Civil Engineers http://www.asce.org
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers http://www.ashrae.org
ASME	American Society of Mechanical Engineers http://www.asme.org
ASSE	American Society of Sanitary Engineering http://www.asse-plumbing.org
ASTM	American Society for Testing and Materials http://www.astm.org
AWI	Architectural Woodwork Institute http://www.awinet.org
AWS	American Welding Society http://www.aws.org
AWWA	American Water Works Association http://www.awwa.org
BHMA	Builders Hardware Manufacturers Association http://www.buildershardware.com
BIA	Brick Institute of America http://www.bia.org
CAGI	Compressed Air and Gas Institute http://www.cagi.org
CGA	Compressed Gas Association, Inc. http://www.cganet.com
CI	The Chlorine Institute, Inc. http://www.chlorineinstitute.org
CISCA	Ceilings and Interior Systems Construction Association http://www.cisca.org

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CISPI	Cast Iron Soil Pipe Institute http://www.cispi.org
CLFMI	Chain Link Fence Manufacturers Institute http://www.chainlinkinfo.org
CPMB	Concrete Plant Manufacturers Bureau http://www.cpmc.org
CRA	California Redwood Association http://www.calredwood.org
CRSI	Concrete Reinforcing Steel Institute http://www.crsi.org
CTI	Cooling Technology Institute http://www.cti.org
DHI	Door and Hardware Institute http://www.dhi.org
EGSA	Electrical Generating Systems Association http://www.egsa.org
EEI	Edison Electric Institute http://www.eei.org
EPA	Environmental Protection Agency http://www.epa.gov
ETL	ETL Testing Laboratories, Inc. http://www.etl.com
FAA	Federal Aviation Administration http://www.faa.gov
FCC	Federal Communications Commission http://www.fcc.gov
FPS	The Forest Products Society http://www.forestprod.org
GANA	Glass Association of North America http://www.cssinfo.com/info/gana.html/
FM	Factory Mutual Insurance http://www.fmglobal.com
GA	Gypsum Association http://www.gypsum.org
GSA	General Services Administration http://www.gsa.gov
HI	Hydraulic Institute http://www.pumps.org

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HPVA	Hardwood Plywood & Veneer Association http://www.hpva.org
ICBO	International Conference of Building Officials http://www.icbo.org
ICEA	Insulated Cable Engineers Association Inc. http://www.icea.net
\ICAC	Institute of Clean Air Companies http://www.icac.com
IEEE	Institute of Electrical and Electronics Engineers http://www.ieee.org
IMSA	International Municipal Signal Association http://www.imsasafety.org
IPCEA	Insulated Power Cable Engineers Association
NBMA	Metal Buildings Manufacturers Association http://www.mbma.com
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry Inc. http://www.mss-hq.com
NAAMM	National Association of Architectural Metal Manufacturers http://www.naamm.org
NAPHCC	Plumbing-Heating-Cooling Contractors Association http://www.phccweb.org.org
NBS	National Bureau of Standards See - NIST
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors http://www.nationboard.org
NEC	National Electric Code See - NFPA National Fire Protection Association
NEMA	National Electrical Manufacturers Association http://www.nema.org
NFPA	National Fire Protection Association http://www.nfpa.org
NHLA	National Hardwood Lumber Association http://www.natlhardwood.org
NIH	National Institute of Health http://www.nih.gov
NIST	National Institute of Standards and Technology http://www.nist.gov

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NLMA	Northeastern Lumber Manufacturers Association, Inc. http://www.nelma.org
NPA	National Particleboard Association 18928 Premiere Court Gaithersburg, MD 20879 (301) 670-0604
NSF	National Sanitation Foundation http://www.nsf.org
NWDA	Window and Door Manufacturers Association http://www.nwwda.org
OSHA	Occupational Safety and Health Administration Department of Labor http://www.osha.gov
PCA	Portland Cement Association http://www.portcement.org
PCI	Precast Prestressed Concrete Institute http://www.pci.org
PPI	The Plastic Pipe Institute http://www.plasticpipe.org
PEI	Porcelain Enamel Institute, Inc. http://www.porcelainenamel.com
PTI	Post-Tensioning Institute http://www.post-tensioning.org
RFCI	The Resilient Floor Covering Institute http://www.rfci.com
RIS	Redwood Inspection Service See - CRA
RMA	Rubber Manufacturers Association, Inc. http://www.rma.org
SCMA	Southern Cypress Manufacturers Association http://www.cypressinfo.org
SDI	Steel Door Institute http://www.steeldoor.org
IGMA	Insulating Glass Manufacturers Alliance http://www.igmaonline.org
SJI	Steel Joist Institute http://www.steeljoist.org

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SMACNA Sheet Metal and Air-Conditioning Contractors
National Association, Inc.
<http://www.smacna.org>

SSPC The Society for Protective Coatings
<http://www.sspc.org>

STI Steel Tank Institute
<http://www.steeltank.com>

SWI Steel Window Institute
<http://www.steelwindows.com>

TCA Tile Council of America, Inc.
<http://www.tileusa.com>

TEMA Tubular Exchange Manufacturers Association
<http://www.tema.org>

TPI Truss Plate Institute, Inc.
583 D'Onofrio Drive; Suite 200
Madison, WI 53719
(608) 833-5900

UBC The Uniform Building Code
See ICBO

UL Underwriters' Laboratories Incorporated
<http://www.ul.com>

ULC Underwriters' Laboratories of Canada
<http://www.ulc.ca>

WCLIB West Coast Lumber Inspection Bureau
6980 SW Varns Road, P.O. Box 23145
Portland, OR 97223
(503) 639-0651

WRCLA Western Red Cedar Lumber Association
P.O. Box 120786
New Brighton, MN 55112
(612) 633-4334

WWPA Western Wood Products Association
<http://www.wwpa.org>

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SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies materials testing activities and inspection services required during project construction to be provided by a Testing Laboratory retained by retained and paid for by Contractor.

1.2 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - T27-06.....Sieve Analysis of Fine and Coarse Aggregates
 - T96-02 (R2006).....Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - T99-01 (R2004).....The Moisture-Density Relations of Soils Using a 2.5 Kg (5.5 lb.) Rammer and a 305 mm (12 in.) Drop
 - T104-99 (R2003).....Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
 - T180-01 (R2004).....Moisture-Density Relations of Soils using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop
 - T191-02(R2006).....Density of Soil In-Place by the Sand-Cone Method
- C. American Concrete Institute (ACI):
 - 506.4R-94 (R2004).....Guide for the Evaluation of Shotcrete
- D. American Society for Testing and Materials (ASTM):
 - A325-06.....Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A370-07.....Definitions for Mechanical Testing of Steel Products
 - A416/A416M-06.....Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
 - A490-06.....Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
 - C31/C31M-06.....Making and Curing Concrete Test Specimens in the Field

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C33-03.....Concrete Aggregates
C39/C39M-05.....Compressive Strength of Cylindrical Concrete
Specimens
C109/C109M-05.....Compressive Strength of Hydraulic Cement Mortars
C138-07.....Unit Weight, Yield, and Air Content
(Gravimetric) of Concrete
C140-07.....Sampling and Testing Concrete Masonry Units and
Related Units
C143/C143M-05.....Slump of Hydraulic Cement Concrete
C172-07.....Sampling Freshly Mixed Concrete
C173-07.....Air Content of freshly Mixed Concrete by the
Volumetric Method
C330-05.....Lightweight Aggregates for Structural Concrete
C567-05.....Density Structural Lightweight Concrete
C780-07.....Pre-construction and Construction Evaluation of
Mortars for Plain and Reinforced Unit Masonry
C1019-08.....Sampling and Testing Grout
C1064/C1064M-05.....Freshly Mixed Portland Cement Concrete
C1077-06.....Laboratories Testing Concrete and Concrete
Aggregates for Use in Construction and Criteria
for Laboratory Evaluation
C1314-07.....Compressive Strength of Masonry Prisms
D698-07.....Laboratory Compaction Characteristics of Soil
Using Standard Effort
D1143-07.....Piles Under Static Axial Compressive Load
D1188-07.....Bulk Specific Gravity and Density of Compacted
Bituminous Mixtures Using Paraffin-Coated
Specimens
D1556-07.....Density and Unit Weight of Soil in Place by the
Sand-Cone Method
D1557-07.....Laboratory Compaction Characteristics of Soil
Using Modified Effort
D2166-06.....Unconfined Compressive Strength of Cohesive Soil
D2167-94(R2001).....Density and Unit Weight of Soil in Place by the
Rubber Balloon Method
D2216-05.....Laboratory Determination of Water (Moisture)
Content of Soil and Rock by Mass
D2922-05.....Density of soil and Soil-Aggregate in Place by
Nuclear Methods (Shallow Depth)

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D2974-07.....Moisture, Ash, and Organic Matter of Peat and
Other Organic Soils
D3666-(2002).....Minimum Requirements for Agencies Testing and
Inspection Bituminous Paving Materials
D3740-07.....Minimum Requirements for Agencies Engaged in the
Testing and Inspecting Road and Paving Material
E94-04.....Radiographic Testing
E164-03.....Ultrasonic Contact Examination of Weldments
E329-07.....Agencies Engaged in Construction Inspection
and/or Testing
E543-06.....Agencies Performing Non-Destructive Testing
E605-93(R2006).....Thickness and Density of Sprayed Fire-Resistive
Material (SFRM) Applied to Structural Members
E709-(2001).....Guide for Magnetic Particle Examination
E1155-96(R2008).....Determining FF Floor Flatness and FL Floor
Levelness Numbers

E. American Welding Society (AWS):

D1.1-07.....Structural Welding Code-Steel

1.3 REQUIREMENTS:

- A. Accreditation Requirements: Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E 329, C 1077, D 3666, D3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office."
- B. Inspection and Testing: Testing laboratory shall inspect materials and workmanship and perform tests described herein and additional tests requested by Resident Engineer. When it appears materials furnished, or work performed by Contractor fail to meet construction contract requirements, Testing Laboratory shall direct attention of Resident Engineer to such failure.
- C. Written Reports: Testing laboratory shall submit test reports to Resident Engineer, Contractor, unless other arrangements are agreed to in writing by the Resident Engineer. Submit reports of tests that fail to meet construction contract requirements on colored paper.

- D. Verbal Reports: Give verbal notification to Resident Engineer immediately of any irregularity.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EARTHWORK:

- A. General: The Testing Laboratory shall provide qualified personnel, materials, equipment, and transportation as required to perform the services identified/required herein, within the agreed to schedule and/or time frame. The work to be performed shall be as identified herein and shall include but not be limited to the following:

1. Observe fill and subgrades during proof-rolling to evaluate suitability of surface material to receive fill or base course. Provide recommendations to the Resident Engineer regarding suitability or unsuitability of areas where proof-rolling was observed. Where unsuitable results are observed, witness excavation of unsuitable material and recommend to Resident Engineer extent of removal and replacement of unsuitable materials and observe proof-rolling of replaced areas until satisfactory results are obtained.
2. Provide part time observation of fill placement and compaction and field density testing in building areas and provide part time observation of fill placement and compaction and field density testing in pavement areas to verify that earthwork compaction obtained is in accordance with contract documents.
3. Provide supervised geotechnical technician to inspect excavation, subsurface preparation, and backfill for structural fill.

B. Testing Compaction:

1. Determine maximum density and optimum moisture content for each type of fill, backfill and subgrade material used, in compliance with ASTM D1557.
2. Make field density tests in accordance with the primary testing method following ASTM D2922 wherever possible. Field density tests utilizing ASTM D1556 shall be utilized on a case by case basis only if there are problems with the validity of the results from the primary method due to specific site field conditions. Should the testing laboratory propose these alternative methods, they should provide satisfactory explanation to the Resident Engineer before the tests are conducted. typical project; adjust for individual project.

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- a. Building Slab Subgrade: At least one test of subgrade for every 185 m² (2000 square feet) of building slab, but in no case fewer than three tests. In each compacted fill layer, perform one test for every 185 m² (2000 square feet) of overlaying building slab, but in no case fewer than three tests.
- b. Foundation Wall Backfill: One test per 30 m (100 feet) of each layer of compacted fill but in no case fewer than two tests.
- c. Pavement Subgrade: One test for each 335 m² (400 square yards), but in no case fewer than two tests.
- d. Curb, Gutter, and Sidewalk: One test for each 90 m (300 feet), but in no case fewer than two tests.
- e. Trenches: One test at maximum 30 m (100 foot) intervals per 1200 mm (4 foot) of vertical lift and at changes in required density, but in no case fewer than two tests.
- f. Footing Subgrade: At least one test for each layer of soil on which footings will be placed. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested subgrade when acceptable to Resident Engineer. In each compacted fill layer below wall footings, perform one field density test for every 30 m (100 feet) of wall. Verify subgrade is level, all loose or disturbed soils have been removed, and correlate actual soil conditions observed with those indicated by test borings.
- C. Testing for Footing Bearing Capacity: Evaluate if suitable bearing capacity material is encountered in footing subgrade.
- D. Testing Materials: Test suitability of on-site and off-site borrow as directed by Resident Engineer.

3.2 FOUNDATION PILES: NOT APPLICABLE

3.3 FOUNDATION CAISSONS: NOT APPLICABLE

3.4 LANDSCAPING:

- A. Test topsoil for organic materials, pH, phosphate, potash content, and gradation of particles.
 - 1. Test for organic material by using ASTM D2974.
 - 2. Determine percent of silt, sand, clay, and foreign materials such as rock, roots, and vegetation.
- B. Submit laboratory test report of topsoil to Resident Engineer.

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3.5 ASPHALT CONCRETE PAVING: NOT APPLICABLE

3.6 SITE WORK CONCRETE: NOT APPLICABLE

3.7 POST-TENSIONING OF CONCRETE: NOT APPLICABLE

3.8 CONCRETE: NOT APPLICABLE

3.9 REINFORCEMENT: NOT APPLICABLE

3.10 SHOTCRETE: NOT APPLICABLE

3.11 PRESTRESSED CONCRETE: NOT APPLICABLE

3.12 ARCHITECTURAL PRECAST CONCRETE: NOT APPLICABLE

3.13 MASONRY:

A. Mortar Tests:

1. Laboratory compressive strength test:

- a. Comply with ASTM C780.
- b. Obtain samples during or immediately after discharge from batch mixer.
- c. Furnish molds with 50 mm (2 inch), 3 compartment gang cube.
- d. Test one sample at 7 days and 2 samples at 28 days.

2. Two tests during first week of operation; one test per week after initial test until masonry completion.

B. Grout Tests:

1. Laboratory compressive strength test:

- a. Comply with ASTM C1019.
- b. Test one sample at 7 days and 2 samples at 28 days.
- c. Perform test for each 230 m² (2500 square feet) of masonry.

C. Masonry Unit Tests:

1. Laboratory Compressive Strength Test:

- a. Comply with ASTM C140.
- b. Test 3 samples for each 460 m² (5000 square feet) of wall area.

D. Prism Tests: For each type of wall construction indicated, test masonry prisms per ASTM C1314 for each 460 m² (5000 square feet) of wall area. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

3.14 STRUCTURAL STEEL:

A. General: Provide shop and field inspection and testing services to certify structural steel work is done in accordance with contract documents. Welding shall conform to AWS D1.1 Structural Welding Code.

B. Prefabrication Inspection:

1. Review design and shop detail drawings for size, length, type and location of all welds to be made.

2. Approve welding procedure qualifications either by pre-qualification or by witnessing qualifications tests.
3. Approve welder qualifications by certification or retesting.
4. Approve procedure for control of distortion and shrinkage stresses.
5. Approve procedures for welding in accordance with applicable sections of AWS D1.1.

C. Fabrication and Erection:

1. Weld Inspection:

- a. Inspect welding equipment for capacity, maintenance and working condition.
- b. Verify specified electrodes and handling and storage of electrodes in accordance with AWS D1.1.
- c. Inspect preparation and assembly of materials to be welded for conformance with AWS D1.1.
- d. Inspect preheating and interpass temperatures for conformance with AWS D1.1.
- e. Measure 25 percent of fillet welds.
- f. Welding Magnetic Particle Testing: Test in accordance with ASTM E709 for a minimum of:
 - 1) 20 percent of all shear plate fillet welds at random, final pass only.
 - 2) 20 percent of all continuity plate and bracing gusset plate fillet welds, at random, final pass only.
 - 3) 100 percent of tension member fillet welds (i.e., hanger connection plates and other similar connections) for root and final passes.
 - 4) 20 percent of length of built-up column member partial penetration and fillet welds at random for root and final passes.
 - 5) 100 percent of length of built-up girder member partial penetration and fillet welds for root and final passes.
- g. Welding Ultrasonic Testing: Test in accordance with ASTM E164 and AWS D1.1 for 100 percent of all full penetration welds, braced and moment frame column splices, and a minimum of 20 percent of all other partial penetration column splices, at random.
- h. Welding Radiographic Testing: Test in accordance with ASTM E94, and AWS D1.1 for 5 percent of all full penetration welds at random.

- i. Verify that correction of rejected welds are made in accordance with AWS D1.1.
 - j. Testing and inspection do not relieve the Contractor of the responsibility for providing materials and fabrication procedures in compliance with the specified requirements.
2. Bolt Inspection:
- a. Inspect high-strength bolted connections in accordance AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts.
 - b. Slip-Critical Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in each connection in accordance with AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
 - c. Fully Pre-tensioned Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in 25 percent of connections in accordance with AISC Specification for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
 - d. Bolts installed by turn-of-nut tightening may be inspected with calibrated wrench when visual inspection was not performed during tightening.
 - e. Snug Tight Connections: Inspect 10 percent of connections verifying that plies of connected elements have been brought into snug contact.
 - f. Inspect field erected assemblies; verify locations of structural steel for plumbness, level, and alignment.
- D. Submit inspection reports, record of welders and their certification, and identification, and instances of noncompliance to Resident Engineer.

3.15 STEEL DECKING: NOT APPLICABLE

3.16 SHEAR CONNECTOR STUDS:

- A. Provide field inspection and testing services required by AWS D.1 to insure shear connector studs have been installed in accordance with contract documents.
- B. Tests: Test 20 percent of headed studs for fastening strength in accordance with AWS D1.1.
- C. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

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3.17 SPRAYED-ON FIREPROOFING: NOT APPLICABLE

3.18 TYPE OF TEST:

Approximate
Number of
Tests
Required

A. Earthwork:

Laboratory Compaction Test, Soils:
(ASTM D1557)

2

Field Density, Soils (AASHTO T191, T205, or T238)

12

Penetration Test, Soils

B. Landscaping:

Topsoil Test

2

C. Aggregate Base:

Laboratory Compaction, (ASTM D1557)

2

Field Density, (ASTM D1556)

12

Aggregate, Base Course

Gradation (AASHTO T27)

1

Wear (AASHTO T96)

1

Soundness (AASHTO T104)

1

D. Asphalt Concrete: NOT USED

E. Concrete: NOT USED

F. Reinforcing Steel: NOT USED

G. Shotcrete: NOT USED

H. Prestressed Concrete: NOT USED

K. Sprayed-On Fireproofing: NOT USED

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SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the control of environmental pollution and damage that the Contractor must consider for air, water, and land resources. It includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.
- B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
 - 1. Adversely effect human health or welfare,
 - 2. Unfavorably alter ecological balances of importance to human life,
 - 3. Effect other species of importance to humankind, or;
 - 4. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- C. Definitions of Pollutants:
 - 1. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
 - 2. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.
 - 6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.

7. Sanitary Wastes:

- a. Sewage: Domestic sanitary sewage and human and animal waste.
- b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2 QUALITY CONTROL

- A. Establish and maintain quality control for the environmental protection of all items set forth herein.
- B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. U.S. National Archives and Records Administration (NARA):
33 CFR 328.....Definitions

1.4 SUBMITTALS

- A. In accordance with Section, 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
 - 1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the Resident Engineer to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, the Contractor shall prepare and submit to the Resident Engineer for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
 - a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
 - b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
 - c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
 - d. Description of the Contractor's environmental protection personnel training program.
 - e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's

proposed operations and the requirements imposed by those laws, regulations, and permits.

- f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
 - g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.
 - h. Permits, licenses, and the location of the solid waste disposal area.
 - i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the District Office of the U.S. Soil Conservation Service and the Department of Veterans Affairs.
 - j. Environmental Monitoring Plans for the job site including land, water, air, and noise.
 - k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.
- B. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

1.5 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the specifications and drawings.
- B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Resident Engineer. Do not fasten or attach ropes, cables, or guys to

trees for anchorage unless specifically authorized, or where special emergency use is permitted.

1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
 - a. Box and protect from damage existing trees and shrubs to remain on the construction site.
 - b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 - c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
3. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
4. Temporary Protection of Disturbed Areas: Construct diversion ditches, benches, and berms to retard and divert runoff from the construction site to protected drainage areas approved under paragraph 208 of the Clean Water Act.
5. Erosion and Sedimentation Control Devices: The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's activities. Construct or install all temporary and permanent erosion and sedimentation control features shown on the Environmental Protection Plan. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.
6. Manage borrow areas to minimize erosion and to prevent sediment from entering nearby water courses or lakes.

7. Manage and control spoil areas to limit spoil to areas shown on the Environmental Protection Plan and prevent erosion of soil or sediment from entering nearby water courses or lakes.
 8. Protect adjacent areas from despoilment by temporary excavations and embankments.
 9. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule. Transport all solid waste off Government property and dispose of waste in compliance with Federal, State, and local requirements.
 10. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 11. Handle discarded materials other than those included in the solid waste category as directed by the Resident Engineer.
- C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
- D. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State of Wisconsin and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency, for those construction operations and activities specified.
1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.

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2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
 3. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
 4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Resident Engineer. Maintain noise-produced work at or below the decibel levels and within the time periods specified.
1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 6:00 p.m unless otherwise permitted by local ordinance or the Resident Engineer. Repetitive impact noise on the property shall not exceed the following dB limitations:

Time Duration of Impact Noise	Sound Level in dB
More than 12 minutes in any hour	70
Less than 30 seconds of any hour	85
Less than three minutes of any hour	80
Less than 12 minutes of any hour	75

2. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract, consisting of, but not limited to, the following:
 - a. Maintain maximum permissible construction equipment noise levels at 15 m (50 feet) (dBA):

EARTHMOVING		MATERIALS HANDLING	
FRONT LOADERS	75	CONCRETE MIXERS	75
BACKHOES	75	CONCRETE PUMPS	75
DOZERS	75	CRANES	75
TRACTORS	75	DERRICKS IMPACT	75
SCAPERS	80	PILE DRIVERS	95
GRADERS	75	JACK HAMMERS	75

TRUCKS	75	ROCK DRILLS	80
PAVERS, STATIONARY	80	PNEUMATIC TOOLS	80
PUMPS	75	BLASTING	N/A
GENERATORS	75	SAWS	75
COMPRESSORS	75	VIBRATORS	75

- b. Use shields or other physical barriers to restrict noise transmission.
 - c. Provide soundproof housings or enclosures for noise-producing machinery.
 - d. Use efficient silencers on equipment air intakes.
 - e. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
 - f. Line hoppers and storage bins with sound deadening material.
 - g. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
3. Measure sound level for noise exposure due to the construction at least once every five successive working days while work is being performed above 55 dB(A) noise level. Measure noise exposure at the property line or 15 m (50 feet) from the noise source, whichever is greater. Measure the sound levels on the A weighing network of a General Purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, take measurements at 900 to 1800 mm (three to six feet) in front of any building face. Submit the recorded information to the Resident Engineer noting any problems and the alternatives for mitigating actions.
- G. Restoration of Damaged Property: If any direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no additional cost to the Government. Repair, rebuild, or restore property as directed or make good such damage in an acceptable manner.
- H. Final Clean-up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the Resident Engineer. Cleaning shall include off the station disposal of all items

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and materials not required to be salvaged, as well as all debris and
rubbish resulting from demolition and new work operations.

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SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
 - 1. Waste Management Plan development and implementation.
 - 2. Techniques to minimize waste generation.
 - 3. Sorting and separating of waste materials.
 - 4. Salvage of existing materials and items for reuse or resale.
 - 5. Recycling of materials that cannot be reused or sold.
- D. At a minimum the following waste categories shall be diverted from landfills:
 - 1. Soil.
 - 2. Inerts (eg, concrete, masonry and asphalt).
 - 3. Clean dimensional wood and palette wood.
 - 4. Green waste (biodegradable landscaping materials).
 - 5. Engineered wood products (plywood, particle board and I-joists, etc).
 - 6. Metal products (eg, steel, wire, beverage containers, copper, etc).
 - 7. Cardboard, paper and packaging.
 - 8. Bitumen roofing materials.
 - 9. Plastics (eg, ABS, PVC).
 - 10. Carpet and/or pad.
 - 11. Gypsum board.
 - 12. Insulation.
 - 13. Paint.
 - 14. Fluorescent lamps.

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1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.
- C. Lead Paint: Section 02 83 33.13, LEAD BASED PAINT REMOVAL AND DISPOSAL.

1.3 QUALITY ASSURANCE

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
 - 1. Excess or unusable construction materials.
 - 2. Packaging used for construction products.
 - 3. Poor planning and/or layout.
 - 4. Construction error.
 - 5. Over ordering.
 - 6. Weather damage.
 - 7. Contamination.
 - 8. Mishandling.
 - 9. Breakage.
- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to reuse and recycle new materials to a minimum of 50 percent.
- D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.
- E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole Building Design Guide website <http://www.wbdg.org> provides a Construction Waste Management Database that contains information on companies that haul, collect, and process recyclable debris from construction projects.

- F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.
- G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.
- H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.
- B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.
- C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.
- D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.
- E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.
- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the

purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.

- K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.
- L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
 - 1. On-site Recycling - Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
 - 2. Off-site Recycling - Materials hauled to a location and used in an altered form in the manufacture of new products.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.
- N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- O. Return: To give back reusable items or unused products to vendors for credit.
- P. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.
- R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:

B. Prepare and submit to the Resident Engineer a written demolition debris management plan. The plan shall include, but not be limited to, the following information:

1. Procedures to be used for debris management.
2. Techniques to be used to minimize waste generation.
3. Analysis of the estimated job site waste to be generated:
 - a. List of each material and quantity to be salvaged, reused, recycled.
 - b. List of each material and quantity proposed to be taken to a landfill.
4. Detailed description of the Means/Methods to be used for material handling.
 - a. On site: Material separation, storage, protection where applicable.
 - b. Off site: Transportation means and destination. Include list of materials.
 - 1) Description of materials to be site-separated and self-hauled to designated facilities.
 - 2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
 - c. The names and locations of mixed debris reuse and recycling facilities or sites.
 - d. The names and locations of trash disposal landfill facilities or sites.
 - e. Documentation that the facilities or sites are approved to receive the materials.

C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.

D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 APPLICABLE PUBLICATIONS

A Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.

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B. U.S. Green Building Council (USGBC):

LEED Green Building Rating System for New Construction

1.7 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. List of each material and quantity to be salvaged, recycled, reused.
- B. List of each material and quantity proposed to be taken to a landfill.
- C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

- A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.
- B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
- C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

- A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
- B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

- A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.

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- B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.
- C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

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**SECTION 02 20 00
TEMPORARY SHORING**

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies design and installation constraints for the shoring system required for temporary support of floor, ceiling and roof members and loads during repair and replacement of the various roof elements.

1.2 RELATED WORK:

A. Section 06 10 00 ROUGH CARPENTRY

1.3 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA and SAMPLES.
- B. Drawings showing complete shoring system, including details of support and bracing from ground to roof, including interface with each intermediate level of building framing.
 - 1. Submittal shall explicitly show conformance with the limitations of Drawings and this Section by note and detail.
 - 2. Design and construction of the temporary shoring system is the sole and exclusive responsibility of the furnishing Contractor. Shoring system review will be for the sole purpose of establishing conformance with the limitations of the Drawings and this Section where such limitations are directly related to the impact of the shoring system on the historic fabric of the building. Review of structural adequacy of shoring members, connections, and all other similar items is specifically excluded.
- C. Certifications documenting compliance with the experience requirements noted as part of the Quality Assurance requirements.

1.4 QUALITY ASSURANCE:

- A. Comply with the applicable provisions of the documents listed under Applicable Publications
- B. Shoring Contractor shall have a minimum of five years experience in the design, erection and removal of shoring in existing buildings.
- C. Shoring Contractor shall retain an Engineer with at least 10 years experience in the design of shoring systems, and currently registered as a Professional Engineer in the State of Wisconsin, for the design of the shoring system.

D. Drawings shall bear the seal of the Engineer designing the shoring system.

1.5 APPLICABLE PUBLICATIONS:

A. Publications listed below form a part of this specification:

1. Secretary of the Interior's Standard for Rehabilitation.

1.6 PROJECT CONDITIONS

- A. Hazardous materials have been uncovered at various locations within the existing building. A report on the presence of hazardous material is available from COTR on request for review and use of the Contractor. Contractor is to examine report to familiarize himself with materials posing a hazard, and their identified locations within the building. Hazardous material may exist at locations not specifically identified in the report. To the greatest extent possible, Contractor shall not disturb hazardous materials or items suspected of containing hazardous materials. If the Work of this section requires removal or disturbance of hazardous materials, Contractor shall comply with all EPA regulations and requirements, and with the regulations and requirements of any other authority having jurisdiction, concerning the removal and legal disposal of those materials.
- B. The existing building, its structure and attachments, and the surrounding site are historically important, and have been designated as part of a National Historic Landmark by the Secretary of the Interior. Design of temporary shoring system shall be sensitive to this designation, and shall meet all limitations noted elsewhere in the Drawings and Specifications. Limitations noted elsewhere are intended solely to preserve the historic fabric of the building to the greatest extent possible, and are not intended to relieve the furnishing Contractor of the sole and exclusive responsibility for design and construction of a safe and effective temporary shoring system.
- C. All currently operating mechanical, plumbing and electrical services are to be maintained throughout the installation, use, and removal of the shoring system. Shoring shall not interfere with the operation of mechanical, plumbing or electrical services.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Shoring may consist of any combination of cribbing, wood or metal staging, formwork, towers, walls, posts, beams, or other elements, of any material deemed appropriate by the Contractor, and that meet the limitations noted on the Drawings and contained herein.

- B. Shoring shall be adjustable through positive means, such as by adjustable screw jacks. Ellis shore clamps shall not be used.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Temporary shoring system is intended to provide support for roof and auditorium ceiling framing to permit repair of failing structural support members.
- B. The existing building and its structural elements are part of an historic district. Design of the shoring system and its impact on the building elements must be consistent with the reference standards.
 - 1. Except where specifically permitted, holes or openings for shoring may not be created in the existing horizontal finish surfaces or sub-surfaces of the building. No holes or openings for shoring may be created in any existing vertical finish surfaces or sub-surfaces.
 - 2. To the greatest extent possible consistent with the design of a safe and effective support system, temporary shoring system shall be designed to sandwich existing floor and ceiling support structures and finishes. Where this requirement will not permit the design of a safe and effective support system, Contractor shall provide documentation to the COTR for review. Relief from this requirement for reason of cost or difficulty may not be anticipated.
 - 3. Shoring system shall be designed to minimize damage to the existing floor structure, metal ceiling finish and plaster ceiling finish.
 - 4. Shoring system shall be entirely self-contained, internally braced, and stable without connection to vertical elements of any kind in the existing building. Under no circumstances may shoring be attached or braced to any vertical surface, post, column, balcony or other element inside or outside the existing building.
 - 5. Shoring system shall be sized and located in such a way that all elements of the shoring system shall be held clear of all vertical interior and exterior surfaces, including molding projections from those surfaces, by a minimum of six inches.
 - 6. Coordinate carefully with the work of Section 02 41 19. Shoring Contractor shall exercise extreme care to minimize impact of shoring system on the existing building, its components, contents and furnishings. Within the shoring limits noted on the plans, shoring Contractor shall identify specific areas requiring removal of existing seats, subflooring, stage extension, railings, plaster,

metal ceiling, trim and all other similar items required for the design and construction of a safe and effective temporary shoring system

- C. Information pertaining to existing conditions shown on the Drawings represents to the best of our knowledge the actual existing field conditions, based on available existing documentation and field investigation. No warranty is made as to their accuracy beyond the areas specifically uncovered during field investigation. Contractor to field verify existing dimensions and conditions critical to design of the temporary shoring system.
- D. Shoring shall be designed to carry its selfweight and the dead weight of the existing structure plus construction and roof live loads as determined by the shoring designer.
- E. Maximum general plan extent of shoring is shown on the Drawings, subject to previously noted clearance limitations. Do not design shoring system to extend beyond the plan limits shown without prior written approval of the COTR.
- F. Shoring shall be effectively cross braced to prevent buckling failure of individual members and to prevent overall shoring stability failure.
- G. Shoring shall be installed snug tight, plumb, and square.
- H. All currently operating mechanical, plumbing and electrical services are to be maintained throughout the installation, use, and removal of the shoring system. Shoring shall not interfere with the operation of mechanical, plumbing or electrical services.
- I. Do not shore against existing sloped Auditorium ceiling area shown on the Drawings.
- J. Upon completion of the Work, all elements of the temporary shoring system shall be completely removed.

3.2 AREA SHORING BELOW AUDITORIUM FLOOR

- A. Provide temporary shoring system between bottom of the framing structure at auditorium floor and basement floor as required to transfer all shoring loads from above first floor to the basement level. Provide additional bracing and blocking as necessary between existing framing members to ensure adequate stability and support for shoring resting on floor structure above.
- B. Conditions at basement floor are variable, consisting of a mix of concrete slab, Cream City brick, and soil. Existing conditions shall be field verified based on anticipated shoring leg locations. Owner has

conducted a limited soil exploration program in the basement level.

This report is available from COTR upon request.

- C. During periods of rain the basement floor has been observed to be wet over large areas, presumably due to poor site drainage. Shoring system shall be adjustable, and designed to accommodate periodic wetting and drying of supporting soil.
- D. Contractor shall provide foundation supports as required for design of temporary shoring system. Upon completion of work, all exposed elements of foundation support system shall be removed, and basement floor shall be restored to its original condition.

3.3 AREA SHORING BETWEEN AUDITORIUM FLOOR AND ORIGINAL CEILING

- A. Provide temporary shoring system between top of first floor and bottom of original plaster ceiling as required to transfer shoring loads from attic level to first floor.
- B. At first floor distribute vertical shoring load over existing floor structure. Provide horizontal distribution elements as required to transfer loads from vertical shoring legs to a point directly over structural elements and shoring below. Do not rest vertical shoring directly on flooring material only. Design shoring to accommodate a sloping auditorium floor level. Shoring shall be supported on first floor level; do not penetrate flooring with shoring system.
- C. Conditions at auditorium floor are variable, and are not able to be observed directly prior to construction.
 - 1. Coordinate removal of existing stage extension and railings with work of Section 02 41 00 Selective Demolition if required for the design of the temporary shoring system. Shoring may rest on framing at lower orchestra pit level if supported below as described elsewhere; do not penetrate orchestra pit flooring with shoring system. Do not support shoring system on orchestra pit cover
 - 2. Coordinate removal of existing seats, wood floor and sleepers with work of Section 02 41 00 Selective Demolition as required for the design of the temporary shoring system. To the greatest extent possible, design temporary shoring system to minimize removal of these items.
- D. Coordinate removal of existing sloping auditorium ceiling framing, including lathe, plaster, metal ceiling, and associated support framing with the work of Section 02 41 00 Selective Demolition as required for the design of the temporary shoring system. To the greatest extent possible, design temporary shoring system to minimize removal of these

items. Selective penetration at locations submitted for approval is preferred to area removal of these items. Do not sandwich existing sloping members between separate unconnected vertical elements of the shoring system.

- E. At original attic level, shoring system shall be designed to support load from roof above distributed over multiple existing joists through existing lathe and plaster ceiling, without crushing existing lathe and plaster ceiling. To the greatest extent possible consistent with safe and effective shoring design, do not penetrate the original plaster ceiling.

3.4 AREA SHORING BETWEEN ORIGINAL ATTIC AND ROOF

- A. Provide temporary shoring system between roof framing structure and ceiling support beams as required to support loads from roof. Provide additional bracing and blocking as necessary between existing framing members at ceiling level to ensure adequate stability and support for shoring from roof.
- B. Roof and attic space extends beyond plan limits of shoring noted on Drawings. Contractor may use attic space to provide shoring system to transfer shoring loads from extent required for repair of brick wall, truss, beam, and roofing elements identified on Drawings to plan locations acceptable for shoring.

3.5 SHORING WITHIN TRUSS PROFILE

- A. Provide shoring between chords of existing truss.
- B. Shoring shall cover full width of truss chord elements. Members shall fit tight to truss chords to prevent vertical movement or rotation of truss chords relative to each other or to other building elements.
- C. Shoring shall provide sufficient clearance to permit installation of repair to truss connections each end as described on the Drawings.
- D. Shoring shall provide sufficient clearance to permit replacement of in-framing beam at top chord as described on the Drawings.
- E. Shoring may not be attached to truss chords by any means that would require drilling holes through the chords, except holes required for installation of connection repairs.

3.6 SHORING BELOW AND IMMEDIATELY ADJACENT TO TRUSS

- A. Provide adjustable shoring between bottom chord of existing truss and first floor framing below, subject to limitations on shoring locations noted elsewhere. Shoring below the first floor to the basement level shall be as noted elsewhere.

- B. Remove only the minimum amount of plaster and lathe ceiling directly below and within 5'-0" either side of the truss chord required for installation of shoring and truss repairs.
- C. Shoring shall provide sufficient clearance to permit installation of repair to truss bearing connections each end as described on the Drawings.
- D. Shoring shall provide sufficient vertical adjustment to raise truss as required for installation of repair to truss bearing connections each end. Shoring shall further permit permanent upward vertical adjustment of a minimum of 3" at the east end to re-establish the original bearing elevation of truss at the exterior wall.

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**SECTION 02 41 00
SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies requirements for limited demolition and removal of selected portions of the existing building. Included is salvage of portions of the existing building including its contents and attachments for the benefit of the Owner, including storage for use elsewhere or reinstallation in original location.

1.2 RELATED WORK

- A. Section 02 20 00 TEMPORARY SHORING
- B. Section 06 10 00 ROUGH CARPENTRY
- C. Section 09 26 00 Veneer Plastering
- D. Section 09 29 00 Gypsum Board

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA and SAMPLES.
- B. Schedule of Selective Demolition Activities. Provide the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 2. Means of protection for items to remain and items in path of waste removal from building.
- C. Means of protection for items to remain and items in path of waste removal from building.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- E. Pre-demolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes

1.4 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner as directed by the Contracting Officer's Technical Representative (COTR)..
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them in original location.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.5 MATERIALS OWNERSHIP

- A. The existing building, its structure and attachments, and the surrounding site are historically important, and have been designated as part of a National Historic Landmark by the Secretary of the Interior. All items of any size and consequence on the grounds and within the building are considered to be part of the historical legacy of the campus and may not be removed or altered except as elsewhere specifically permitted by the Drawings and Specification.
- B. Additional historic and non-historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, furnishings, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage only those items necessary for successful completion of the Work; to the greatest extent possible the existing premises shall remain undisturbed. Remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner as directed by the COTR. Coordinate with the COTR, who will establish special procedures for removal and salvage.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01. Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Review limits of demolition, and the condition of existing items to be removed and salvaged or removed and reinstalled.
2. Inspect and discuss condition of construction to be selectively demolished.
3. Review structural load limitations of existing structure.
4. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
5. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
6. Review areas where existing construction is to remain and requires protection.

1.7 PROJECT CONDITIONS

- A. Contractor shall exercise extreme care to avoid damage to the existing historical fabric of the building, and to specifically avoid damage to existing materials to remain, and any materials scheduled for removal and salvage or removal and reinstallation, in performing the work of this section.**
- B. Contractor performing work under this section shall carefully coordinate with the Contractor performing work under 02 20 00 TEMPORARY SHORING to determine the extent of the selective demolition required to accommodate the temporary shoring. To the greatest extent possible, demolition of portions of the existing building, whether for removal, removal and salvage, or removal and reinstallation, shall be minimized.**
- C. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practicable.
- D. Notify the COTR of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- E. Hazardous materials have been uncovered at various locations within the existing building. A report on the presence of hazardous material is available from COTR upon request for review and use of the Contractor. Contractor is to examine report to familiarize himself with materials posing a hazard, and their identified locations within the building. Hazardous material may exist at locations not specifically identified in the report. To the greatest extent possible, Contractor shall not disturb hazardous materials or items suspected of containing hazardous materials. If the Work of this section requires removal or disturbance of hazardous materials, Contractor shall comply with all EPA regulations

and requirements, and with the regulations and requirements of any other authority having jurisdiction, concerning the removal and legal disposal of those materials.

- F. Storage or sale of removed items or materials on-site is not permitted.
- G. Utility Service: Maintain existing in-use utilities and protect them against damage during selective demolition operations.
- H. Maintain fire-protection facilities in service during selective demolition operations.
- I. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. If utilities are to be temporarily interrupted during selective demolition, verify that utilities have been disconnected and capped before starting demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the COTR.
- D. Survey of Existing Conditions: Record existing conditions by use of photographs.
 - 1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
 - 2. Before selective demolition of existing building elements that will be reinstalled, make detailed photographic record of current condition of building elements, and make permanent record of measurements, materials, and construction details required to reinstall in original location and condition.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL AND ELECTRICAL SYSTEMS

- A. If services and systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services and systems that bypass area of selective demolition and that maintain continuity of services and systems to other parts of building.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent portions of the building to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to minimize to the greatest extent possible water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures and dust control specified in Division 01.
- C. Temporary Shoring: As described elsewhere, provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being removed, removed for salvage, or removed and reinstalled. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required for temporary shoring and repair of structure noted on Drawings. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches.
 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished items and materials not intended for salvage or reinstallation promptly.
- B.** Selective demolition may be performed only in areas and for items of the Project that are specifically designated. In all areas of this project the terms "demolish" or "remove" shall mean historic "removal" or "dismantling" as specified in Section for "Historic Treatment Procedures."
- C.** Reuse of Building Elements: Project has been designed to result in reuse of designated building elements as noted on Drawings and below. Do not demolish building elements beyond what is indicated on Drawings without approval of the COTR.
1. Removed and Salvaged Structural Elements:
 - a. Clean salvaged elements.
 - b. Store items on-site in an area designated by Owner.
 - c. Transport elements to storage area designated by Owner.
 - d. Protect elements from damage during transport and storage.
 2. Removed and Reinstalled Structural Elements:
 - a. Prior to removing members to be reinstalled:

1. Contractor shall temporarily label member. Labeling shall be securely attached to member, but shall not permanently mark or otherwise damage member.
 2. Contractor shall make photographic record of member and its location within the building in a manner that legibly displays the temporary label, and which will permit the Contractor to reinstall the member in the same location and orientation as originally existed. Photographic record shall be maintained on-site until final completion of work.
 - b. Clean and repair elements to functional condition adequate for intended reuse.
 - c. Protect elements from damage during transport and storage.
 - d. Reinstall items in original location. Provide connections, supports, and miscellaneous materials necessary to make element functional for use.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

3.5 PROCEDURES FOR SPECIFIC ITEMS

- A. Brick Masonry: Brick removed from walls and piers is intended to be reused in completed construction. Carefully remove brick in preparation for reinstallation. Remove in small sections. Where possible remove brick by hand without cutting mortar joints. When hand removal is not possible, cut masonry only at mortar joints, then remove masonry between cuts. Carefully remove existing mortar from face of bricks using hammers and hand chisels without damaging brick. Carefully clean brick by removing dirt, coal dust, mold and other surface contaminants from the face of the brick, without damaging the brick and without use of chemicals or abrasive blasting. Store for reuse.
- B. Roofing: Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weathertight. Refer to Division 07 for new roofing requirements. Remove roofing system down to substrate.
- C. Seating: Carefully remove existing seats for subsequent reinstallation.
1. Contractor shall exercise extreme care during seat removal to avoid damage to seats, supports and fasteners.
 2. Seats may be removed only within the areas designated on the drawings as areas within which shoring is permitted. Contractor shall remove no more than the minimum amount of seating necessary to accommodate

- shoring system. Coordinate with shoring Contractor to determine extent of removal required.
3. Seating, supports and fasteners shall be stored in an area designated by the COTR for reinstallation at the completion of the project.
 4. Damage to the seats that occurs as a result of demolition or during transportation to storage area designated by COTR shall be repaired in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
- D. Wood Flooring, Sleepers: Carefully remove existing wood flooring and supporting sleeper framing for subsequent reinstallation.
1. Contractor shall exercise extreme care during removal of wood flooring and sleepers to avoid damage to these items, and to enable reinstallation of the maximum amount of existing historic material.
 2. Flooring and sleepers may be removed only within the areas designated on the drawings as areas within which shoring is permitted. Contractor shall remove no more than the minimum amount of flooring and sleepers necessary to accommodate shoring system. Coordinate with shoring Contractor to determine extent of removal required.
 3. Floor and sleepers shall be stored in an area designated by the COTR for reinstallation at the completion of the project.
 4. Individual sleepers damaged during removal may be replaced with new treated lumber sized to match the existing as approved by the COTR. Wholesale replacement is not permitted.
 5. Flooring damaged during removal or during transportation to storage area designated by COTR shall be repaired if possible or replaced in kind in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
- E. Stage Extension and Railings: Carefully remove existing stage extension, wrought iron stair railings, and wooden orchestra pit rail for subsequent reinstallation.
1. Contractor shall exercise extreme care during removal of stage extension and railings to avoid damage to these items, and to enable reinstallation of the maximum amount of existing historic material.
 2. These items may be removed only to the extent required to accommodate shoring system. Coordinate with shoring Contractor to determine extent of removal required.
 3. Railings and stage extension shall be stored in an area designated by the COTR for reinstallation at the completion of the project.

4. Railings, stage extension side walls and grills damaged during removal or during transportation to storage area designated by COTR shall be repaired in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
 5. Stage extension flooring and structural support members damaged during removal or during transportation to storage area designated by COTR shall be repaired if possible or replaced in kind in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
- F. Metal Ceiling: Carefully remove existing metal ceiling panels
1. Contractor shall exercise extreme care during removal of the metal ceiling panels to avoid damage to these items, and to enable reinstallation of the maximum amount of existing historic material.
 2. Metal ceiling panels may be removed only within the areas designated on the drawings as areas within which shoring is permitted. Contractor shall remove no more than the minimum amount of ceiling panels necessary to accommodate shoring system. Coordinate with shoring Contractor to determine extent of removal required.
 3. Metal ceiling panels shall be stored in an area designated by the COTR for reinstallation at the completion of the project.
 4. Metal ceiling panels damaged during removal shall be repaired in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
- G. Plaster Ceiling: Carefully remove existing plaster ceiling.
1. Contractor shall exercise extreme care during removal of the plaster ceiling to avoid damage to the ceiling to remain and adjacent items, and to enable reinstallation of the maximum amount of existing historic material.
 2. Plaster ceiling may be removed only within the areas designated on the drawings as areas within which shoring is permitted. Contractor shall remove the minimum amount of ceiling necessary to accommodate shoring system. Coordinate with shoring Contractor to determine extent of removal required.
 3. Plaster ceiling damaged during removal shall be repaired in a manner that meets the Secretary of the Interiors Standards for Rehabilitation at no additional cost to the Owner.
- H. Decorative Trim: Carefully remove existing decorative trim. Either on or adjacent to the ceiling, be it either horizontal or vertical.

1. Contractor shall exercise extreme care during removal of the decorative trim to avoid damage to these or adjacent items, and to enable reinstallation of the maximum amount of existing historic material.
2. Decorative trim may be removed only within the areas designated on the drawings as areas within which shoring is permitted. Contractor shall remove no more than the minimum amount of decorative trim necessary to accommodate shoring system. Coordinate with shoring Contractor to determine extent of removal required.
3. Decorative trim shall be stored in an area designated by the COTR for reinstallation at the completion of the project.
4. Decorative trim damaged during removal shall be repaired in a manner that meets the secretary of the interiors standards for rehabilitation at no additional cost to the owner.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items or materials indicated to be salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent. Conveying system must be self supporting, and cannot be attached to existing structure.
- B. Do not burn demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

- - -E N D - - -

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABLIZATION
VA PROJECT: 695-11-117

SECTION 02 82 11
TRADITIONAL ASBESTOS ABATEMENT

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1.0 - ASBESTOS INSPECTION REPORT

**LIMITED PRE-RENOVATION
ASBESTOS INSPECTION REPORT
BUILDING 41 STRUCTURAL STABILIZATION**

SITE:

**VA MEDICAL CENTER
BUILDING 41
5000 WEST NATIONAL AVENUE
WEST MILWAUKEE, WISCONSIN**

PREPARED FOR:

**DAVID J. CLEARY, P.E.
PROJECT MANAGER
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1109 NORTH MAYFAIR ROAD, SUITE 208
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1300 West Canal Street
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PROJECT REFERENCE #13064

APRIL 2012

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- 2 1st Floor Level Plan
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- A. Credentials – Wisconsin Certified Asbestos Inspectors
- B. Certificate of Analysis
- C. Photo Documentation

1. INTRODUCTION

Chequamegon Bay Engineering, LLC (Chequamegon) retained Sigma Environmental Services, Inc. (Sigma) to perform a pre-renovation asbestos inspection in advance of the Building 41 Structural Stabilization project at the Veterans Administration Medical Center (VA) located at 5000 West National Avenue, West Milwaukee, Wisconsin. The asbestos inspection services are described in Sigma's proposal, dated October 18, 2011. The asbestos inspection included visual observation, material sampling, and laboratory analysis of suspect asbestos-containing building materials (ACBM).

State of Wisconsin certified asbestos inspectors, Mr. Dale Armbruster (All-156285) and Mr. Tom McCoy (All-117261), performed the limited pre-renovation asbestos inspection on March 19, 2012. Appendix A provides a copy of Mr. Armbruster's and Mr. McCoy's asbestos inspection certification cards. This limited pre-renovation asbestos inspection was performed in substantial compliance with the United States Environmental Protection Agency's (USEPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos regulations (40 CFR 61, Subpart M) and the Wisconsin Department of Natural Resources (WDNR) Control of Asbestos Emissions (WAC Chapter NR 447) inspection and sampling requirements with the exception of items and/or areas listed in the Qualifications of Report section.

Building 41 was unoccupied at the date and time of the inspection. Figures indicating the existing floor layouts and approximate limits of work dated March 7, 2012 were provided to Sigma prior to the start of the inspection and are included as Figures 1, 2, 3, and 4.

2. BACKGROUND

Pre-renovation asbestos inspections are required by the USEPA NESHAP regulations provided in 40 CFR 61 and the WDNR Control of Asbestos Emissions defined in Chapter NR 447. The Owner is required to perform a thorough asbestos inspection of the affected facility or part of the facility where the renovation operation will occur prior to the commencement of the renovation.

3. ASBESTOS SAMPLE COLLECTION AND ANALYSIS PROCEDURES

On March 19, 2011, Sigma visually inspected building materials and obtained representative samples from each identified homogeneous material of suspect ACBM with the exception of items listed in the Qualifications of Report section. The samples were submitted under chain of custody to International Asbestos Testing Laboratories, Inc. (IATL) in Mount Laurel, New Jersey for asbestos analysis. IATL is a National Voluntary Laboratory Accreditation Program (NVLAP) and American Industrial Hygiene Association (AIHA) approved laboratory. Samples were analyzed using Polarized Light Microscopy (PLM) coupled with Dispersion Staining as outlined in the USEPA's, *"Method for the Determination of Asbestos in Bulk Building Material (EPA-600/R93/116)"*. Samples identified using PLM analysis with less than 10 percent asbestos content were point counted in accordance with EPA-600/R-93/116.

4. SUMMARY OF RESULTS

ACBM was not identified within the limits of renovation as defined in the figures. The following materials were identified within the limits of inspection and were evaluated and determined not to contain asbestos:

- MB8M – 8-Inch Brick Mortar
- MFL-1 – Linoleum Floor, brown and tan
- MFL-2 – Linoleum Floor, brown
- MRS – Roof Shingles
- SPI – Plaster

A copy of the asbestos Certificate of Analysis and material chain of custody is provided in Appendix B. Photo documentation of each sample is provided in Appendix C.

5. REGULATORY DISCUSSION

The USEPA, WDNR, and Occupational Safety and Health Administration (OSHA) regulate activities involving asbestos. The following provides a brief summary of the requirements specific to asbestos.

USEPA and WDNR

The NESHAP regulations authorized under the Clean Air Act and administered by the USEPA and the WDNR cover a wide variety of substances, including asbestos. NESHAP defines ACBM that must be removed prior to demolition and/or renovation and those ACBMs that can remain.

In addition to the requirements stated below, a trained individual knowledgeable with the requirements of 40 CFR Part 61, Subpart M must be onsite during demolition and/or renovation activities and be available during normal business hours. If any ACBM material becomes damaged or rendered friable during demolition and/or renovation, proper abatement measures must be immediately initiated by appropriately trained State of Wisconsin certified abatement personnel. Wisconsin Administrative Code Chapter NR 447 defines requirements for the disposal of wastes containing asbestos.

Friable

Friable asbestos material is defined as a material containing more than one percent asbestos that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Category I

Non-friable Category I ACM is generally defined as packings, gaskets, resilient floor covering, and asphalt roofing containing more than one percent asbestos that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Category II

Non-friable Category II ACBM is defined as any material, excluding Category I non-friable ACM, containing more than one percent asbestos that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure.

RACM

Regulated Asbestos Containing Material (RACM) is defined by the NESHAP as:

- Friable asbestos material; or
- Category I nonfriable ACM that has become friable; or
- Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting or abrading; or
- Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations

With limited exceptions, Section NR 447.08 of the Wisconsin Administrative Code generally requires that all RACM be removed from a facility being demolished or renovated before any activity that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal.

OSHA

OSHA regulates employee exposure to hazardous conditions. 29 Code of Federal Regulations (CFR) 1926 regulates employee exposure to hazardous substances in the construction industry. 29 CFR 1926.1101 regulates activities which may impact materials containing asbestos. OSHA defines asbestos as chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered. While materials determined to contain asbestos at less than one percent are not classified as ACM and are therefore not regulated by the USEPA and WDNR, OSHA does regulate activities involving these materials.

6. RECOMMENDATIONS

Materials identified within the limits of renovation were determined by laboratory analysis not to contain greater than one percent asbestos.

Sigma recommends that the VA review the materials and narrative above in order to determine which materials require removal prior to renovation activities. Sigma also recommends that the VA be aware of the OSHA requirements for activities involving materials containing asbestos. Additional recommendations are provided in the Qualifications of Report section provided below.

7. QUALIFICATIONS OF REPORT

The findings and recommendations included herein are based on information obtained during the site visit and from previous experience. The limitations of the report and recommended actions are as follows:

1. The material condition assessment reflects conditions at the date and time of the inspection. Material conditions may change due to age, use, maintenance, and other building conditions.

It is recommended that the ACM material condition be assessed immediately prior to initiating renovation and/or demolition activities.

2. An assessment/inspection of non-building components including but not limited to office equipment, chairs, desks, tables, cabinets, wall hangings, and other equipment and materials used or stored by the former/current occupant was not conducted.

It is recommended that these items be managed in accordance with all local, state, and federal rules and regulations.

3. Homogeneous material samples were collected from reasonably accessible areas only. Limited destructive investigation methods were not employed to identify additional materials not readily visible. During abatement, demolition, renovation, and/or further inspection, a potential exists for encountering asbestos and/or other hazardous materials not previously identified to become revealed.

It is recommended that there is one individual on-site during abatement and demolition that is designated as a "Competent Person". At a minimum, this individual shall be a State of Wisconsin certified asbestos supervisor familiar with applicable asbestos and hazardous material related regulations; have the experience to recognize potential work crew and environmental exposures; institute proper personal protective equipment and personnel monitoring as necessary; have the authority to stop work; and meet training requirements established by the State of Wisconsin. Discovery of suspect asbestos and/or other hazardous materials should be reported immediately to the Owner so that appropriate measures can be implemented. Further sampling of newly discovered materials may be required to confirm the presence of ACM within walls and other areas that were not visible or reasonably accessible during the asbestos inspection. Any additional or ACM discovered after this inspection is the responsibility of the building owner.

4. In accordance with the terms of the October 18, 2011 proposal, the following floors, materials, building systems and/or areas were not evaluated for the presence of asbestos:

- The building electrical system(s) was not sampled for the presence of asbestos as it was energized at the time of the inspection;
- Areas not included in the scope of renovation as defined by the drawings dated March 7, 2012 and provided by Chequamegon; and
- Areas exceeding 10 feet above floor level were not evaluated for the presence of suspect ACM.

These areas and building systems should be assumed to contain materials having greater than one percent asbestos or be further evaluated prior to conducting renovation and/or demolition activities.

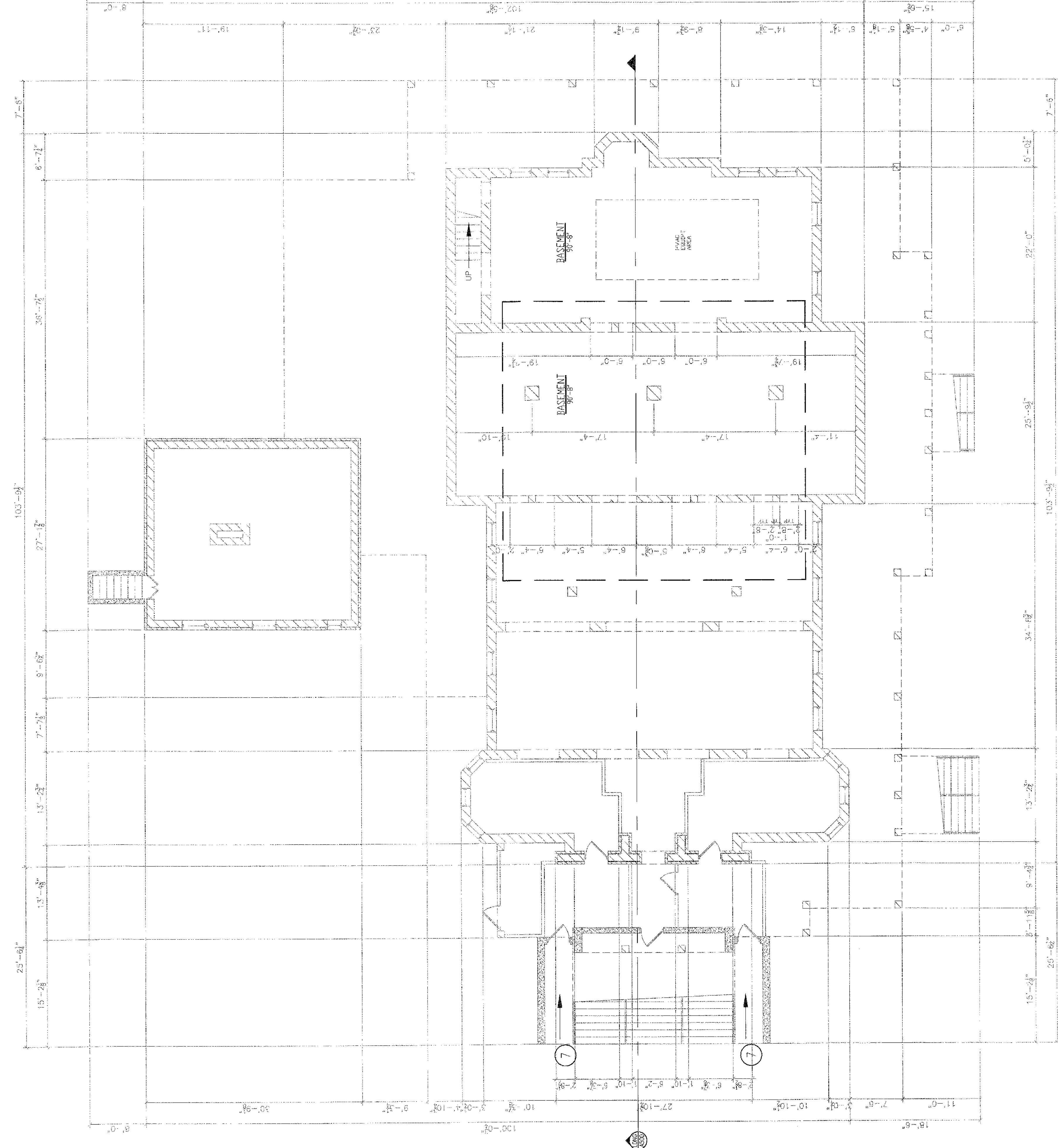
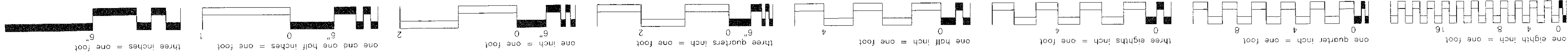
5. A limited inspection of the roof was conducted which included removal of shingles from a lower roof. Based upon visual observation, it appears that the lower and upper roofs are homogenous.

The contractor performing the roof repairs and/or modification should verify that the lower and upper roofs are comprised of the same materials. Materials not previously evaluated should be assumed to contain greater than one percent asbestos or be further evaluated prior to conducting renovation and/or demolition activities.

8. STATE AND LOCAL REPORTING REQUIREMENTS

The WDNR and the Department of Health Services (DHS) require notification (WDNR Form 4500-113 and WDHS Form F00041) prior to asbestos abatement or demolition projects. The City of West Milwaukee should be consulted for applicability of additional local ordinances, codes, and permits.

FIGURES



EXISTING BASEMENT FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTE:
DUE TO THE HISTORIC NATURE OF THE BUILDING, ANY SCAFFOLDING THE CONTRACTOR MAY REQUIRE TO MAINTAIN THE EXISTING BUILDING SHALL BE COMPLETELY STABLE AND SELF-SUPPORTING WITHOUT FASTENING TO THE EXISTING BUILDING. THE CONTRACTOR MUST DESIGN AND ERECT SCAFFOLDING TO MAINTAIN A MINIMUM OF 12 INCHES BETWEEN FACE OF SCAFFOLDING AND EXISTING BUILDING.

- FLOOR - SYMBOLS LEGEND**
- EXISTING MASONRY WALLS TO REMAIN
 - EXISTING DOOR TO REMAIN
 - PHOTO OF EXIST. CONDITION
 - SHORING LIMITS
 - DETAIL REFERENCE
 - PLAN NOTE
 - ROOF NAME + ELEVATION
 - DETAIL REFERENCE

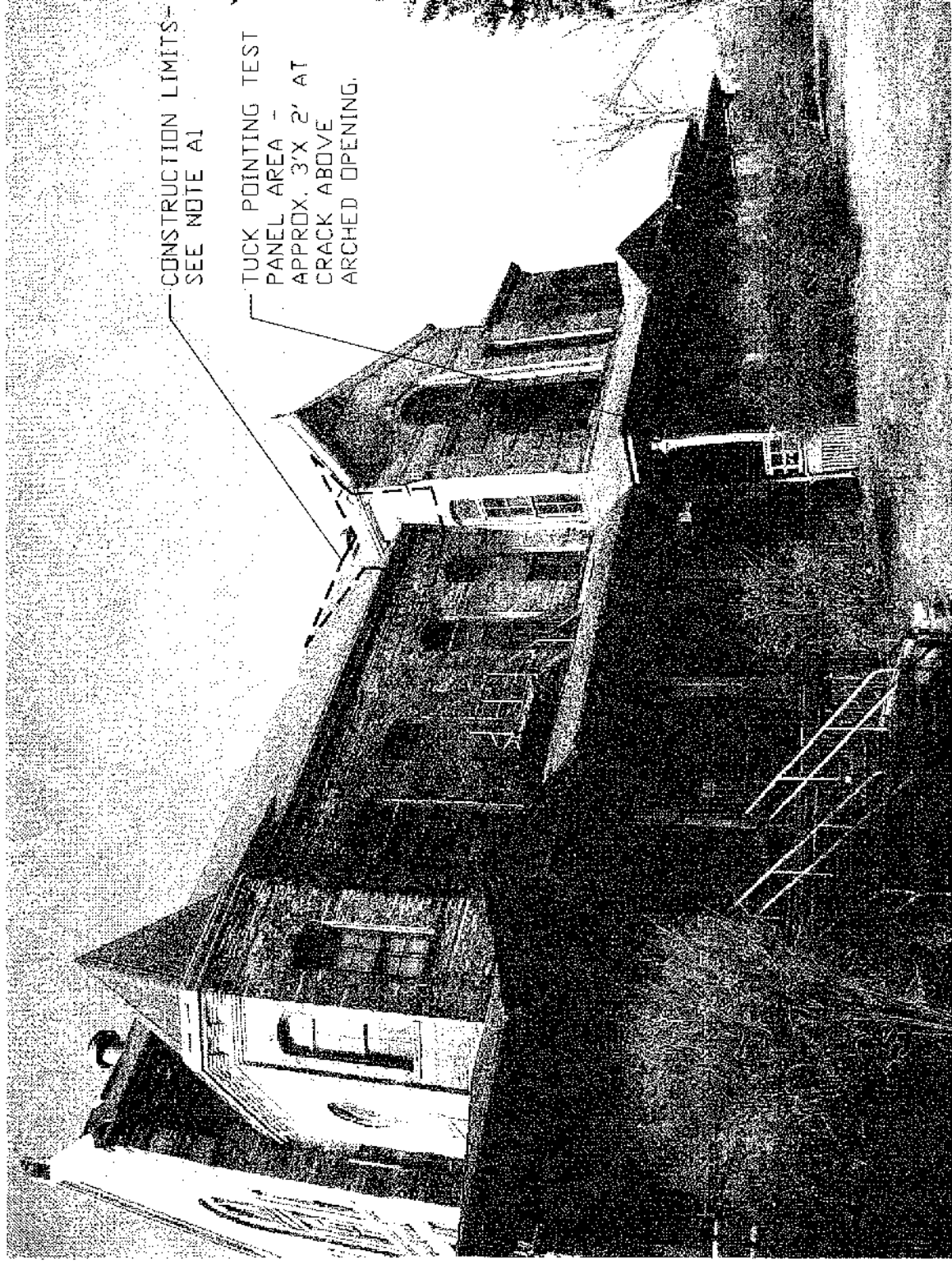
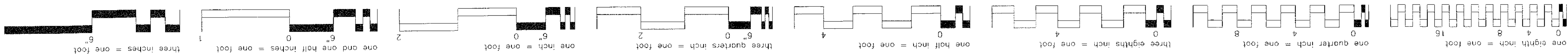
- FLOOR PLAN - GENERAL NOTES**
- DIMENSIONS ON FLOOR PLAN ARE BASED ON FACE OF FINISHED MALL TO FACE OF FINISHED MALL (NORMAL).
 - VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE.
 - MAINTAIN CONTINUOUS UTILITY SERVICE TO ALL SPACES IN THE BUILDING NOT AFFECTED BY THIS WORK. COORDINATE WITH OWNER ANY DISRUPTION IN SERVICES REQUIRED TO PERFORM WORK OR TO MODIFY EXISTING PIPING, DUCTWORK OR ANY ASSOCIATED EQUIPMENT.
 - CONTRACTOR RESPONSIBLE FOR PROPER ABUTMENT OF ANY ADJACENT MATERIALS REQUIRED TO BE REMOVED IN AREAS AFFECTED BY SHORING INSTALLATION AS PART OF BASE BID.
 - CONTRACTOR SHALL ENSURE ALL CURRENTLY OPERATING MECHANICAL, PUMPING AND ELECTRICAL SERVICES ARE MAINTAINED THROUGHOUT THE SHORING INSTALLATION AS PART OF THE BASE BID.
 - CONTRACTOR RESPONSIBLE FOR DESIGN DETAILS AND INSTALLATION OF ALL SHORING. MAINTAIN EXISTING MATERIALS AND CONDITIONS WHERE EVER POSSIBLE. ANY MATERIALS REMOVED OR DAMAGED SHALL BE REPLACED.
 - CONTRACTOR SHALL PROTECT ALL EXISTING MATERIALS AND SERVICES. USE CARELESS FROM ROOF. SHORING SHALL BE REMOVED IMMEDIATELY AFTER SHORING COMPLETION AND INTERIOR LIGHT THESE AREAS AS SPECIFIED IN CONTRACT DOCUMENTS.

- FLOOR PLAN NOTES**
- SHORING NOTES:
 - GENERAL EXTENT OF SHORING INDICATED ON FLOOR PLANS.
 - CHAINS & BOLLING TO BE REMOVED AND STORED FOR REINSTALLATION.
 - FLOOR SURFACE USED TO MAKE FLAT BEATING BASE TO BE REMOVED AND REPAIRED.
 - REMOVAL OF STAGE EXTENSION FOR STORAGE AND REINSTALLATION.
 - STAGE STAIR REMOVAL OPTIONAL BASED ON EXTENTS OF SHORING.
 - APPROPRIATE LOCATION OF FALLING ROOF BEAM ABOVE.
 - APPROPRIATE LOCATION OF FALLING ROOF BEAM ABOVE.
 - NO SHORING PERMITTED ABOVE OR BELOW BALCONY.
 - NO SHORING PERMITTED IN AREA BEHIND BALCONIES, BOXES AND STAIRS.
 - NO SHORING PERMITTED IN AREA BEHIND BALCONIES, BOXES AND STAIRS.
 - CONTRACTOR ACCESS THROUGH THIS DOOR.
 - CONTRACTOR STAGING AND LIGHT TOOL STORAGE AREA.
 - CONTRACTOR ACCESS NOT PERMITTED IN THIS AREA.

Figure 1 - Basement Floor Plan & Limits of Inspection

5% DESIGN DRAWINGS

Project Number 695-002		Office of Facilities Management	
Building Number 41		Drawing Number A100	
Repair Building Service α Roof Truss Stabilization		Location VA Medical Center, Milwaukee, WI	
Plan Approved: Project Director		Date 7 March 2012	
CONSULTANTS: 1000 West Oak Street Milwaukee, WI 53233 PHONE: 414.224.8000 FAX: 414.224.8001 WWW.BIBACON.COM		CREATED BY: PRA rk	
KEY PLAN: →		ASHLAND, WI 211 EPM STREET, 2ND FLOOR MILWAUKEE, WI 53233 PHONE: 414.224.8000 FAX: 414.224.8001 WWW.BIBACON.COM	
Dept. of Veterans Affairs Medical Center 5000 W. National Avenue Milwaukee, WI		CHEQUAMEGON BAY ENGINEERING, INC. CONSULTANTS	
Revisions:		Date	



A1 PHOTOGRAPH OF EAST WALL
NTS
A101

EXTERIOR PHOTOGRAPH - SYMBOLS LEGEND

- AREA TO BE REBUILT
- AREA OF TUCK POINTING
- TEST PATCH
- CONSTRUCTION LIMITS

PHOTOGRAPH - GENERAL NOTES

- VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE.
- CONTRACTOR RESPONSIBLE FOR PROPER ABATEMENT OF ANY HAZARDOUS MATERIALS REQUIRED TO BE REMOVED IN AREAS AFFECTED BY SCAFFOLDING INSTALLATION AS PART OF BASE BID.
- CONTRACTOR RESPONSIBLE FOR DESIGN DETAILS AND INSTALLATION OF ALL SCAFFOLDING. MAINTAIN EXISTING MATERIALS AND CONDITIONS WHERE EVER POSSIBLE. ANY MATERIALS REMOVED OR DAMAGED SHALL BE REPLACED.

PHOTOGRAPH NOTES - BY PHOTOGRAPH

- CONSTRUCTION LIMITS FOR EXTERIOR PORTION OF BUILDING INCLUDING TUCK POINTING. LOCATION - EAST ELEVATION.
- CONSTRUCTION AREA FOR HALL RECONSTRUCTION AT TRUSS AND TUCK POINTING - EAST ELEVATION.
- CONSTRUCTION LIMITS FOR EXTERIOR PORTION OF BUILDING INCLUDING TUCK POINTING AND WALL RECONSTRUCTION. TRUSS RECONSTRUCTION AND ROOFING - WEST ELEVATION.
- CONSTRUCTION AREA FOR HALL RECONSTRUCTION AT TRUSS AND TUCK POINTING - WEST ELEVATION.

FLOOR - SYMBOLS LEGEND

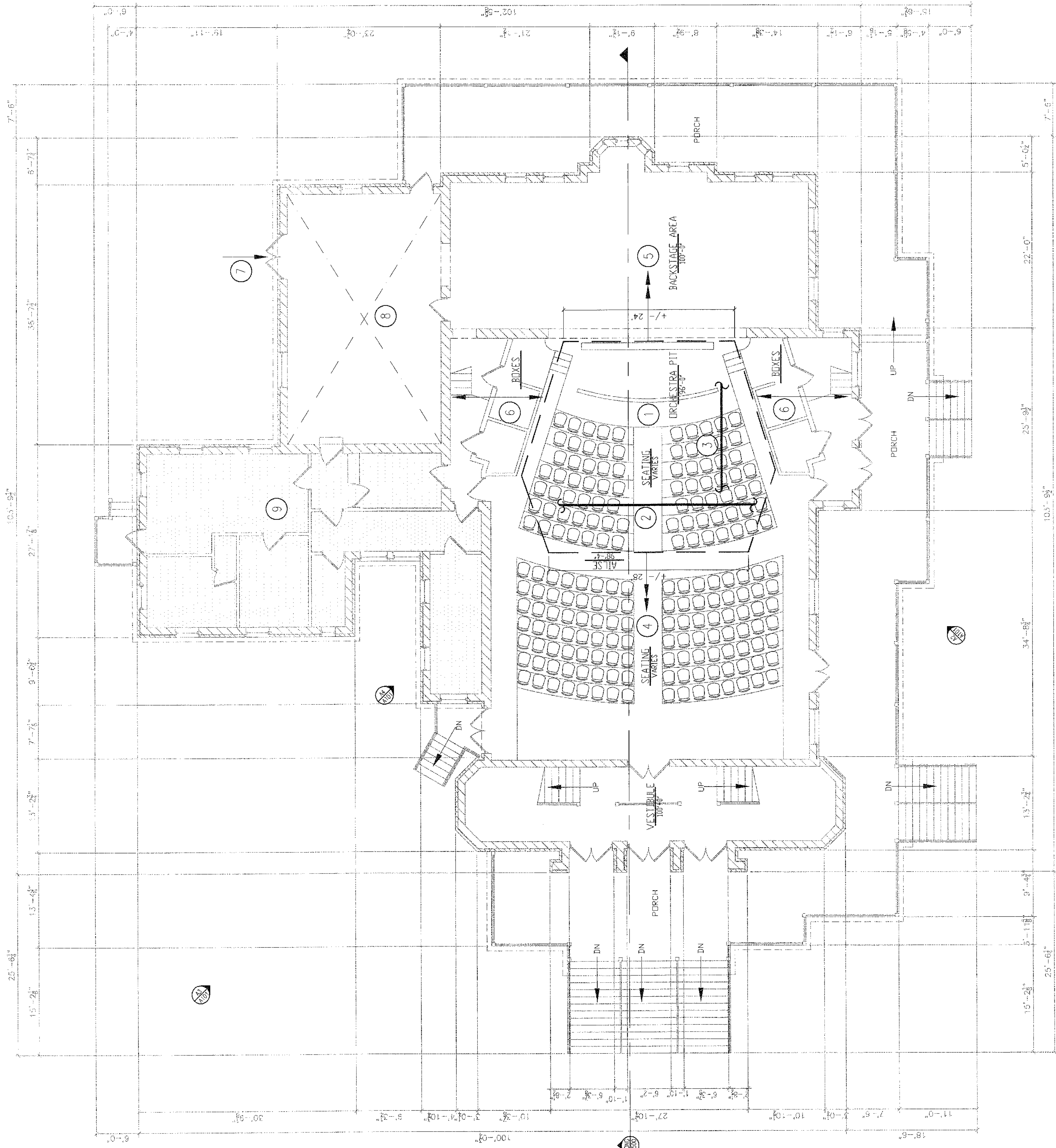
- EXISTING WALLS TO REMAIN
- EXISTING MASONRY WALLS TO REMAIN
- EXISTING DOOR TO REMAIN
- PHOTO OF EXIST. CONDITION
- SCORING LIMITS
- DETAIL REFERENCE
- PLAN NOTE
- ROOF NAME & ELEVATION
- DETAIL REFERENCE

FLOOR PLAN - GENERAL NOTES

- DIMENSIONS ON FLOOR PLAN ARE BASED ON FACE OF FINISHED WALL TO FACE OF FINISHED WALL (NORMAL).
- VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE.
- MAINTAIN CONTINUOUS UTILITY SERVICE TO ALL SPACES IN THE BUILDING NOT AFFECTED BY THIS WORK. COORDINATE WITH OWNER ANY DISRUPTION IN SERVICES REQUIRED TO PERFORM WORK OR TO MODIFY EXISTING PIPING, DUCTWORK OR ANY ASSOCIATED EQUIPMENT.
- CONTRACTOR RESPONSIBLE FOR PROPER ABATEMENT OF ANY HAZARDOUS MATERIALS REMOVED TO BE REMOVED IN AREAS AFFECTED BY SCAFFOLDING INSTALLATION AS PART OF BASE BID.
- CONTRACTOR SHALL ENSURE ALL CORRECTLY OPERATING MECHANICAL, PLUMBING AND ELECTRICAL SERVICES ARE MAINTAINED THROUGHOUT THE SCAFFOLDING INSTALLATION AS PART OF THE BASE BID.
- CONTRACTOR RESPONSIBLE FOR DESIGN DETAILS AND INSTALLATION OF ALL SCAFFOLDING. MAINTAIN EXISTING MATERIALS AND CONDITIONS WHERE EVER POSSIBLE. ANY MATERIALS REMOVED OR DAMAGED SHALL BE REPLACED.
- CONTRACTOR TO PATCH EXTERIOR WALLS WHERE DAMAGE HAS OCCURRED FROM ROOF REPAIRS. PATCHES SHALL BE MATCHED TO EXISTING MATERIALS AND FINISHES. ALL PATCHES SHALL BE TIGHT AND WATER TIGHT AT THESE AREAS AS SPECIFIED IN CONTRACT DOCUMENTS.

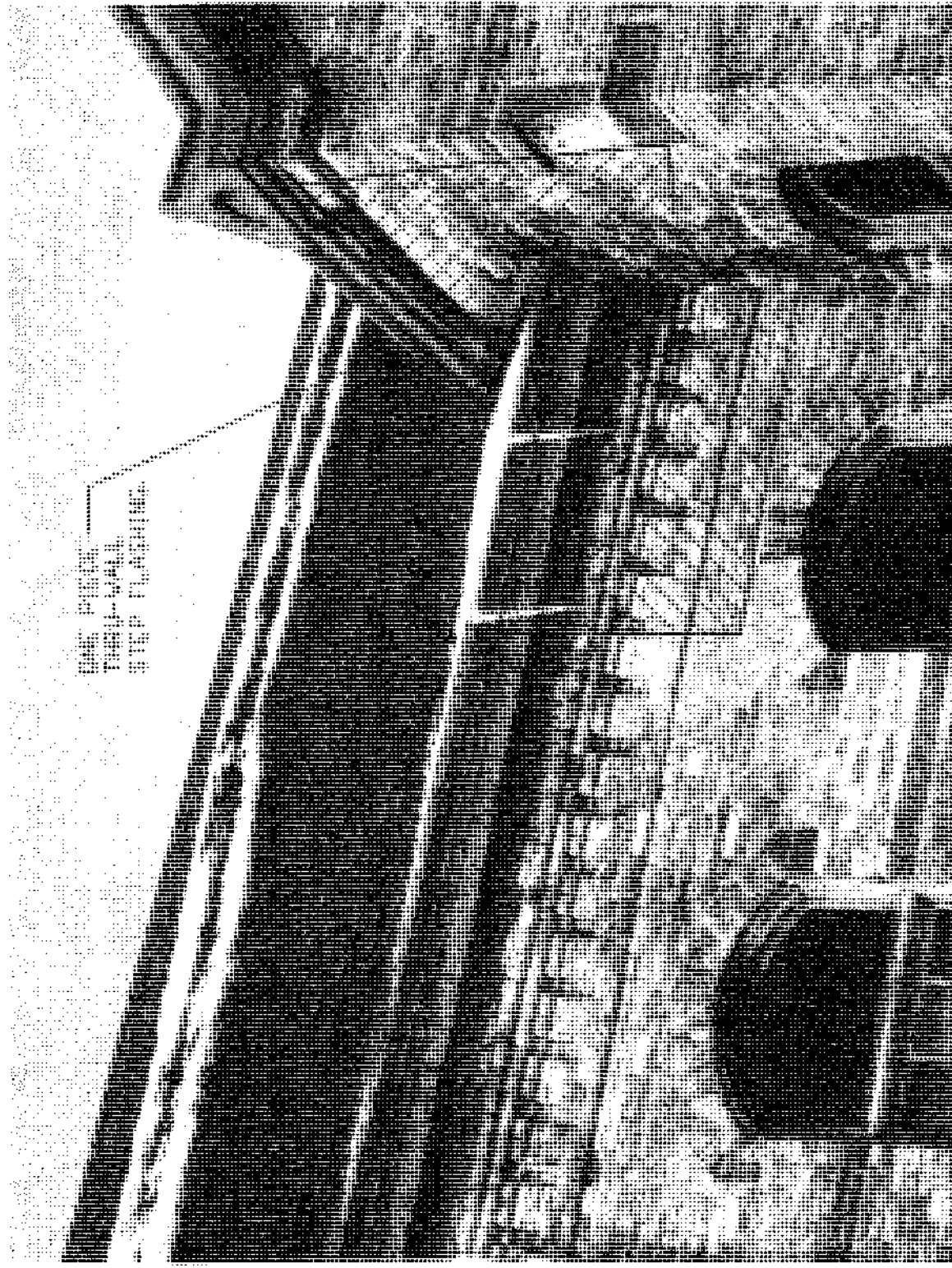
FLOOR PLAN NOTES

- SHORING NOTES:
 - EXISTENCY OF SHORING INDICATED ON FLOOR PLANS.
 - CHANGING 1. SHORING TO BE REMOVED AND STORED FOR REINSTALLATION.
 - FLOOR SURFACE USED TO MAKE FLAT SEATING BASE TO BE REMOVED AND RECONSTRUCTED.
 - REMOVAL OF STAGE EXTENSION FOR STORAGE AND REINSTALLATION.
 - STAGE STAIR REMOVAL. OPTIONAL BASED ON EXTENTS OF SHORING.
- APPROXIMATE LOCATION OF FALLING ROOF TRUSS ABOVE.
- NO SHORING PERMITTED ABOVE OR BELOW BALCONY.
- NO SHORING PERMITTED IN BACKSTAGE AREA.
- NO SHORING PERMITTED IN AREA BEHIND BALCONIES, BOXES AND STAIRS.
- CONTRACTOR ACCESS THROUGH THIS DOOR.
- CONTRACTOR STAGING AND LIGHT TOOL STORAGE AREA.
- CONTRACTOR ACCESS NOT PERMITTED IN THIS AREA.

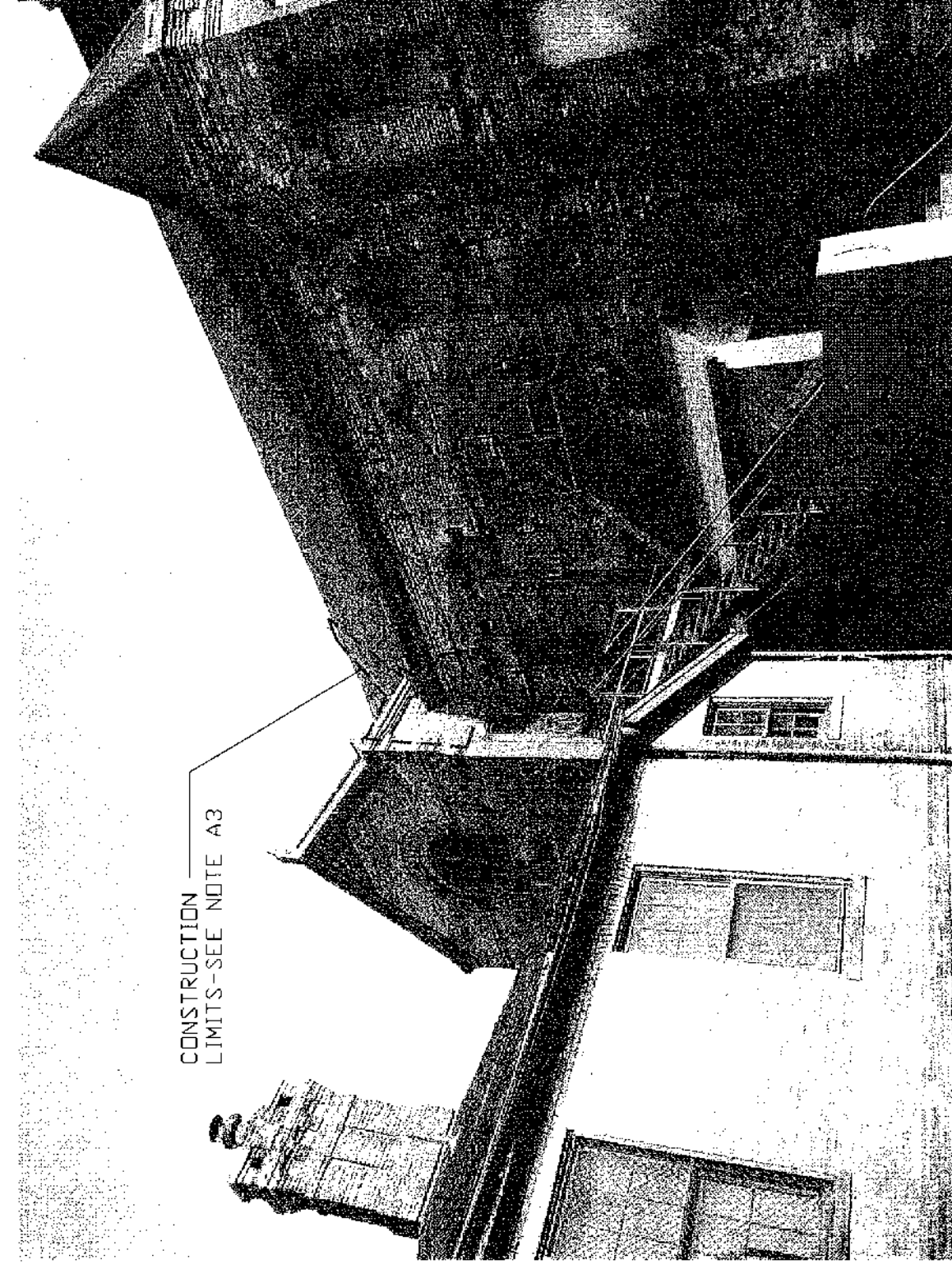


FIRST FLOOR LEVEL PLAN - ARCHITECTURAL REPAIRS
SCALE: 1/8" = 1'-0"

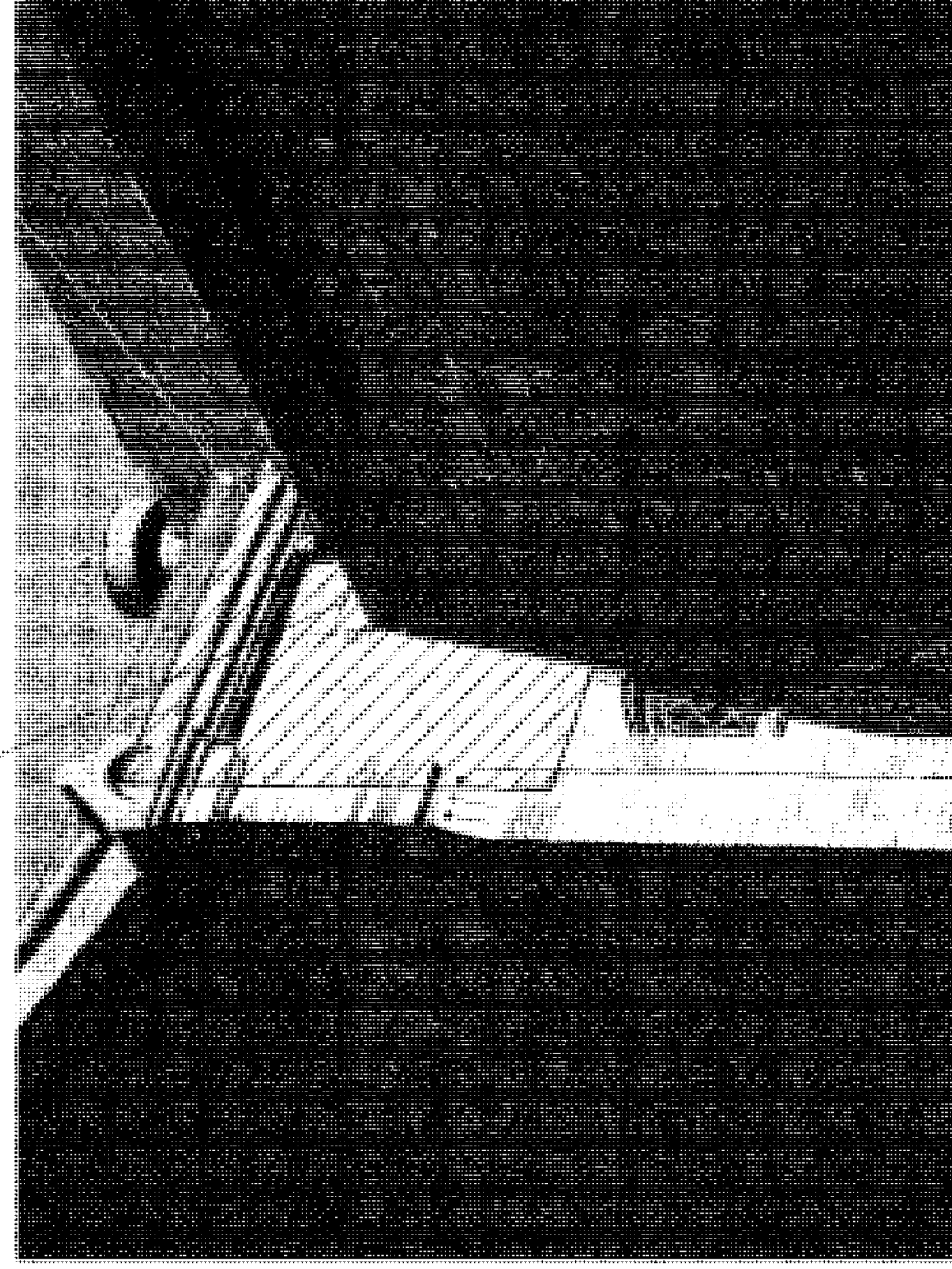
NOTE: DUE TO THE HISTORIC NATURE OF THE BUILDING, ANY SCAFFOLDING THE CONTRACTOR MAY CHOOSE TO ERECT TO ASSIST IN RENOVATION, SALVAGE, REPLACEMENT AND TUCKPOINTING OF THE BRICK MASONRY, ROOFING, OUTTERS, ROOFING, AND OTHERS, SHALL BE CONSIDERED AS A SEPARATE BID. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING BUILDING IN ANY WAY, NO ATTACHMENT OF ANY KIND TO THE EXISTING BUILDING PERMITTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING BUILDING IN ANY WAY, NO ATTACHMENT OF ANY KIND TO THE EXISTING BUILDING PERMITTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE EXISTING BUILDING IN ANY WAY, NO ATTACHMENT OF ANY KIND TO THE EXISTING BUILDING PERMITTED.



A2 PHOTOGRAPH OF PARTIAL EAST WALL
NTS
A101



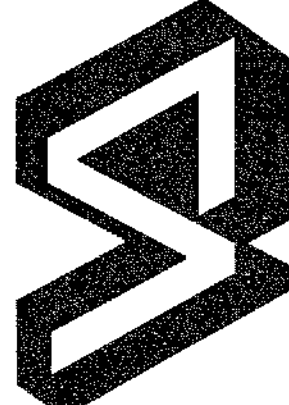

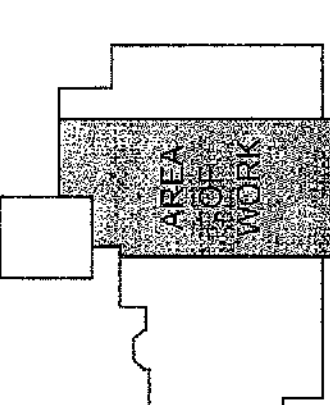


A3 PHOTOGRAPH OF WEST WALL
NTS
A101

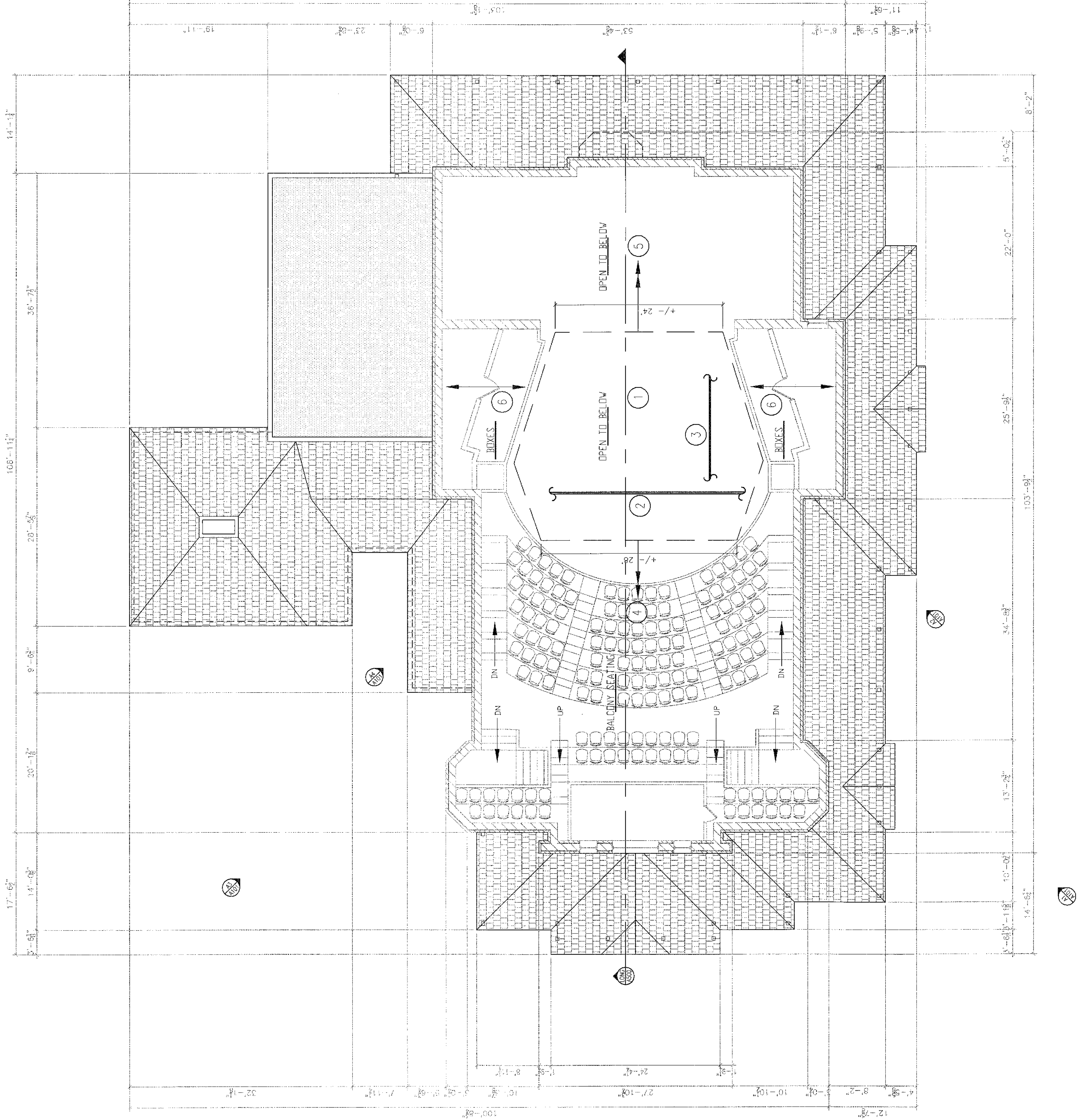
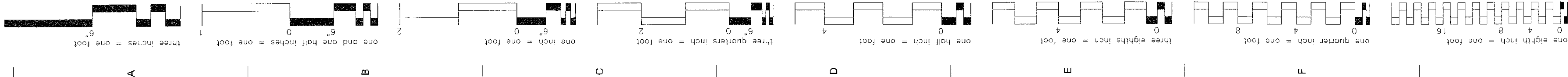


A4 PHOTOGRAPH OF PARTIAL WEST WALL
NTS
A101

Figure 2 - 1st Floor Level Plan & Limits of Inspection

95% DESIGN DRAWINGS

 Dept. of Veterans Affairs Medical Center 5000 W. National Avenue Milwaukee, WI				 KEY PLAN: 1/8" = 1'-0"		 CONSULTANTS:		 PROJECT LEADER/STRUCTURAL ENGINEER:		<p>ASHLAND, WI PHONE: (715) 882-0000 FAX: (715) 882-0001 MILWAUKEE, WI PHONE: (414) 258-0000 FAX: (414) 258-0001</p> <p>CHEQUAMEGON BAY ENGINEERING, INC. © 2003-2004</p>		<p>Project Title Building 41 - Repair Building Service & Roof Truss Stabilization</p> <p>Location VA Medical Center, Milwaukee, WI</p> <p>Date 7 March 2012</p> <p>Checked By: PRA</p> <p>Drawn By: rk</p>		<p>Project Number 695-002</p> <p>Building Number 41</p> <p>Drawing Number A101</p>		<p>Office of Facilities Management</p> <p>Department of Veterans Affairs</p>	
--	--	---	--	---	--	---	--	--	--	---	--	--	--	--	--	--	--



- FLOOR - SYMBOLS LEGEND**
- SHORING LIMITS
 - EXISTING WALLS TO REMAIN
 - EXISTING MASONRY WALLS TO REMAIN
 - EXISTING DOOR TO REMAIN
 - PHOTO OF EXIST. CONDITION
 - DETAIL REFERENCE
 - PLAN NOTE
 - ROOM NAME / ELEVATION
 - DETAIL REFERENCE

- FLOOR PLAN - GENERAL NOTES**
- DIMENSIONS ON FLOOR PLAN ARE BASED ON FACE OF FINISHED WALL TO FACE OF FINISHED WALL (NOTHING).
 - VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE.
 - MAINTAIN CONTINUOUS UTILITY SERVICE TO ALL SPACES IN THE BUILDING NOT AFFECTED BY THIS WORK. COORDINATE WITH OWNER ANY DISRUPTION IN SERVICES REQUIRED TO PERFORM THIS WORK.
 - CONTRACTOR RESPONSIBLE FOR PROPER MAINTENANCE OF ANY MASONRY MATERIALS REQUIRED TO BE REMOVED IN AREAS AFFECTED BY SHORING INSTALLATION AS PART OF BASE BID.
 - CONTRACTOR SHALL ENSURE ALL CURRENTLY OPERATING MECHANICAL, PLUMBING AND ELECTRICAL SERVICES ARE MAINTAINED THROUGHOUT THE SHORING INSTALLATION AS PART OF THE BASE BID.
 - CONTRACTOR RESPONSIBLE FOR DESIGN DETAILS AND INSTALLATION OF ALL SHORING. SHORING SHALL BE REMOVED IMMEDIATELY AFTER WORK IS COMPLETED AND MATERIALS REMOVED OR DAMAGED SHALL BE REPLACED.
 - CONTRACTOR TO PATCH EXTERIOR WALLS WHERE DAMAGE HAS OCCURRED FROM ROOF STRUCTURE BUILDINGS TO BE BROUGHT BACK TO ORIGINAL CONDITION AND WATER TIGHT AT THESE AREAS AS SPECIFIED IN CONTRACT DOCUMENTS.

- FLOOR PLAN NOTES**
- SHORING NOTES:
 - GENERAL EXTENT OF SHORING INDICATED ON FLOOR PLANS
 - CHAINS / RAILING TO BE REMOVED AND STORED FOR REINSTALLATION
 - REMOVE EXISTING SHORING AND REINSTALL NEW SHORING TO BE REMOVED AND STORED FOR REINSTALLATION
 - REMOVAL OF STAGE EXTENSION FOR STORAGE AND REINSTALLATION
 - STAGE STAIR REMOVAL OPTIONAL BASED ON EXTENT OF SHORING
 - APPROXIMATE LOCATION OF FALLING ROOF TRUSS ABOVE.
 - APPROXIMATE LOCATION OF FALLING ROOF BEAM ABOVE.
 - NO SHORING PERMITTED ABOVE OR BELOW BALCONY.
 - NO SHORING PERMITTED IN BACKSTAGE AREA.
 - NO SHORING PERMITTED IN AREA BENEATH BALCONIES, BOXES AND STAIRS.
 - CONTRACTOR ACCESS THROUGH THIS DOOR.
 - CONTRACTOR STAGING AND LIGHT TOOL STORAGE AREA.
 - CONTRACTOR ACCESS NOT PERMITTED IN THIS AREA.

UPPER MEZZANINE/
LOWER LEVEL ROOF PLAN -
ARCHITECTURAL REPAIRS

NOTE: TO THE HISTORIC NATURE OF THE BUILDING, ANY SCAFFOLDING THE CONTRACTOR MAY CHOOSE TO ERECT TO ASSIST IN REMOVAL, SALVAGE, REPLACEMENT AND REPAIRING OF THE BRICK MASONRY, ROOFING, GUTTERS, DOWNSPUTS, ETC. SHALL BE CONSIDERED AS AN ADDITIONAL SERVICE. SUPPORTING WITHOUT FASTENING TO THE EXISTING BUILDING IN ANY WAY NO ATTACHMENT OF ANY KIND TO THE EXISTING BUILDING PERMITTED. A MINIMUM OF 12 INCHES BETWEEN FACE OF SCAFFOLDING AND EXISTING BUILDING.

Figure 3 - Upper Mezzanine and Lower Level Roof Plan & Limits of Inspection

95% DESIGN DRAWINGS

		Office of Facilities Management	
Project Title Building 41 - Repair Building Service & Roof Truss Stabilization		Project Number 695-002	Drawing Number 41
Drawing Title Upper Mezzanine/Lower Level Roof Plan - Architectural Repairs		Drawing Number A103	
PROJECT LEADER/STRUCTURAL ENGINEER: CHEQUAMEGON BAY ENGINEERING, INC. 1000 West Main Street Milwaukee, WI 53233 Tel: 414-380-2000 Fax: 414-380-2001 www.chequamegonbay.com		Location VA Medical Center, Milwaukee, WI	
CONSULTANTS: Intelligent Designs 1000 West Main Street Milwaukee, WI 53233 Tel: 414-380-2000 Fax: 414-380-2001 www.intelligentdesigns.com		Checked By: PRA Date 7 March 2012	
KEY PLAN:		Drawn By: rkf	
		Department of Veterans Affairs	
		Dept. of Veterans Affairs Medical Center 5000 W. National Avenue Milwaukee, WI	
Revisions:		Date	

APPENDIX A

Credentials – Wisconsin Certified Asbestos Inspectors

**ASBESTOS SUPERVISOR**

Issued By

STATE OF WISCONSIN

Dept. of Health Services

Dale Cameron Armbruster
823 Blaine Ave
Racine WI 53405-2407

		220 lbs	5' 10"
ACS-156285	Exp: 06/17/2012	03/23/1960	Male

Training due by: 06/17/2012

**ASBESTOS INSPECTOR**

Issued By

STATE OF WISCONSIN

Dept. of Health Services

Dale Cameron Armbruster
823 Blaine Ave
Racine WI 53405-2407

		220 lbs	5' 10"
AIL-156285	Exp: 08/11/2012	03/23/1960	Male

Training due by: 08/11/2012

ASBESTOS SUPERVISOR
 Issued By
 STATE OF WISCONSIN
 Dept. of Health Services

Thomas J McCoy Jr
 809 Buena Vista Ave
 Waukesha WI 53188-3849

195 lbs 5' 10"

ACS-117261	Exp: 03/03/2012	02/01/1960	Male
------------	-----------------	------------	------

Training due by: 03/03/2012

ASBESTOS INSPECTOR
 Issued By
 STATE OF WISCONSIN
 Dept. of Health Services

Thomas J McCoy Jr
 809 Buena Vista Ave
 Waukesha WI 53188-3849

195 lbs 5' 10"

AI-117261	Exp: 04/07/2012	02/01/1960	Male
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Training due by: 04/07/2012

APPENDIX B

Certificate of Analysis

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599162	Description / Location: White Plaster
Client No.: 01	1st Floor; NE
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Fibrous Material</u>	100

Lab No.: 4599162	Description / Location: Grey Plaster	Layer No.: 2
Client No.: 01	1st Floor; NE	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Fibrous Material</u>	100	

Lab No.: 4599163	Description / Location: White Plaster
Client No.: 02	1st Floor; NE
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Fibrous Material</u>	100

Lab No.: 4599163	Description / Location: Grey Plaster	Layer No.: 2
Client No.: 02	1st Floor; NE	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
5	Cellulose	
<u>% Non-Fibrous Material</u>	95	

Accreditation NIST-NVLAP No. 101165-0 NY-DOH No. 11021 AIHA-LAP, LLC No. 100188

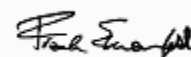
*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government
This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method: EPA 600/R-93/116, by Polarized Light Microscopy

Comments: Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Approved By:



Date: 3/28/2012

Frank E. Ehrenfeld, III
Laboratory Director

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599164	Description / Location: White Plaster
Client No.: 03	1st Floor; NE
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
None Detected	None Detected
	100

Lab No.: 4599164	Description / Location: Grey Plaster	Layer No.: 2
Client No.: 03	1st Floor; NE	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
Trace	Hair	
		100

Lab No.: 4599165	Description / Location: Grey Vinyl Sheet Flooring
Client No.: 04	1st Floor; C
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Cellulose
10	Fibrous Glass
5	Wollastonite
	75

Lab No.: 4599165	Description / Location: Tan Mastic	Layer No.: 2
Client No.: 04	1st Floor; C	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
None Detected	None Detected	
		100

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599166	Description / Location: Grey Vinyl Sheet Flooring
Client No.: 05	1st Floor; C
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Cellulose
10	Fibrous Glass
5	Wollastonite
<u>% Non-Fibrous Material</u>	75

Lab No.: 4599166	Description / Location: Tan Mastic	Layer No.: 2
Client No.: 05	1st Floor; C	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Fibrous Material</u>		100

Lab No.: 4599167	Description / Location: Grey Vinyl Sheet Flooring
Client No.: 06	1st Floor; C
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Cellulose
10	Fibrous Glass
5	Wollastonite
<u>% Non-Fibrous Material</u>	75

Lab No.: 4599167	Description / Location: Tan Mastic	Layer No.: 2
Client No.: 06	1st Floor; C	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Fibrous Material</u>		100

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599168	Description / Location: Brown Vinyl Sheet Flooring
Client No.: 07	1st Floor; C
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Cellulose
<u>% Non-Fibrous Material</u>	
	90

Lab No.: 4599168	Description / Location: Brown Mastic	Layer No.: 2
Client No.: 07	1st Floor; C	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Fibrous Material</u>		100

Lab No.: 4599168	Description / Location: Brown Fibrous	Layer No.: 3
Client No.: 07	1st Floor; C	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
100	Cellulose	
<u>% Non-Fibrous Material</u>		None Detected

Lab No.: 4599169	Description / Location: Brown Vinyl Sheet Flooring
Client No.: 08	1st Floor; NW
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
10	Cellulose
<u>% Non-Fibrous Material</u>	
	90

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599170	Description / Location: Brown Vinyl Sheet Flooring			
Client No.: 09	1st Floor; C			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	10	Cellulose	90

Lab No.: 4599170	Description / Location: Brown Mastic	Layer No.: 2		
Client No.: 09	1st Floor; C			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.: 4599171	Description / Location: Black Roof Shingle			
Client No.: 10	Exterior; Northwest			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	20	Cellulose	80

Lab No.: 4599171	Description / Location: Black Roof Material	Layer No.: 2		
Client No.: 10	Exterior; Northwest			
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	30	Cellulose	70

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government
This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 4599172	Description / Location: Black Roof Shingle
Client No.: 11	Exterior; East Center
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
20	Cellulose
<u>% Non-Fibrous Material</u>	
	80

Lab No.: 4599172	Description / Location: Black Roof Material	Layer No.: 2
Client No.: 11	Exterior; East Center	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
30	Cellulose	
<u>% Non-Fibrous Material</u>		
		70

Lab No.: 4599173	Description / Location: Black Roof Shingle
Client No.: 12	Exterior; North Center
<u>% Asbestos</u>	<u>Type</u>
None Detected	None Detected
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>
20	Cellulose
<u>% Non-Fibrous Material</u>	
	80

Lab No.: 4599173	Description / Location: Black Roof Material	Layer No.: 2
Client No.: 12	Exterior; North Center	
<u>% Asbestos</u>	<u>Type</u>	
None Detected	None Detected	
<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	
30	Cellulose	
<u>% Non-Fibrous Material</u>		
		70

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

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This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

CERTIFICATE OF ANALYSIS

Client: Sigma Environmental Services
1300 West Canal Street
Milwaukee WI 53233

Report Date: 3/28/2012
Report No: 267690
Project: VA-Building 41
Project No.: 13064

BULK SAMPLE ANALYSIS SUMMARY

Lab No.:	4599174	Description / Location:	Off-White Mortar; A/W 8" Brick	
Client No.:	13		Exterior; Northwest	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.:	4599175	Description / Location:	Off-White Mortar; A/W 8" Brick	
Client No.:	14		Exterior; East Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Lab No.:	4599176	Description / Location:	Off-White Mortar; A/W 8" Brick	
Client No.:	15		Exterior; North Center	
<u>% Asbestos</u>	<u>Type</u>	<u>% Non-Asbestos Fibrous Material</u>	<u>Type</u>	<u>% Non-Fibrous Material</u>
None Detected	None Detected	None Detected	None Detected	100

Accreditation

NIST-NVLAP No. 101165-0

NY-DOH No. 11021

AIHA-LAP, LLC No. 100188

*This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any agency of the U.S. government
This report shall not be reproduced except in full, without written approval of the laboratory.*

Analytical Method:

EPA 600/R-93/116, by Polarized Light Microscopy

Comments:

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analysis Performed By: R. Kennedy

Date: 3/28/2012

- Chain of Custody -

Client: Sigma Environmental Services, Inc.
1300 West Canal Street
Milwaukee, Wisconsin
Phone: (414) 643-4200
FAX: (414) 643-4210

Project Name: VA - Building 41
Project No.: #13064
Contact: Jeff Senn
Pager: 414-643-4151

Special: _____
Instructions: _____

Type:

Asbestos				Lead				Other			
<input type="checkbox"/>	Air	<input type="checkbox"/>	Soil	<input type="checkbox"/>	Air	<input type="checkbox"/>	Soil				
<input checked="" type="checkbox"/>	Bulk	<input type="checkbox"/>	Dust	<input type="checkbox"/>	Bulk	<input type="checkbox"/>	Dust				
<input type="checkbox"/>	Water	<input type="checkbox"/>	Other	<input type="checkbox"/>	Water	<input type="checkbox"/>	Other				

Analysis Method:

<input type="checkbox"/>	PCM: NIOSH 7400	<input checked="" type="checkbox"/>	PLM: Bulk Asbestos EPA 600	<input type="checkbox"/>	TEM: AHERA
<input type="checkbox"/>	PCM: OSHA	<input checked="" type="checkbox"/>	PLM: Point Counting 198.1	<input type="checkbox"/>	TEM: NIOSH 7402
<input type="checkbox"/>	PCM: Other _____	<input type="checkbox"/>	PLM: NOB via 198.1 (PLM only)	<input type="checkbox"/>	TEM: EPA Level II
<input type="checkbox"/>	AAS: NIOSH 7082 (Air)	<input type="checkbox"/>	If <1% by PLM, to TEM via 198.4	<input type="checkbox"/>	TEM: Microvac/Wipe
<input type="checkbox"/>	AAS: Lead in Drinking Water		to meet NYSDOH requirements**	<input type="checkbox"/>	TEM: Asbestos in Water
<input type="checkbox"/>	AAS: Lead in Paint ASTM D3335-85a		(** call to confirm TAT!)	<input type="checkbox"/>	TEM: Bulk Analysis
<input type="checkbox"/>	AAS: Lead Dust/Wipe			<input type="checkbox"/>	TEM: NOB 198.4
<input type="checkbox"/>	AAS: Other Metals/Soil _____			<input type="checkbox"/>	TEM: Other
				<input type="checkbox"/>	Total Dust: NIOSH 0500

Turnaround

FAX: _____ date / time Verbals: _____ date / time

Time:

<input type="checkbox"/>	10 Day	<input type="checkbox"/>	3 Day	<input type="checkbox"/>	1 Day	<input type="checkbox"/>	RUSH
<input checked="" type="checkbox"/>	5 Day	<input type="checkbox"/>	2 Day	<input type="checkbox"/>	6 Hour		

Preliminary FAX / Verbal Results Requested by: _____

Sample Numbers:

Client #(s): 01 - 15
(start) (end)
IATL #(s): _____ - _____
(start) (end) Total: 15

Chain of Custody:

Relinquished: <u>[Signature]</u>	Date: <u>3/22/12</u>	Time: <u>15:00</u>
Received: _____	Date: _____	Time: _____
Sample Log-in: <u>[Signature]</u>	Date: _____	Time: _____
Sample Prep: _____	Date: <u>MAR 21 2012</u>	Time: _____
Analyzed: <u>[Signature]</u>	Date: _____	Time: _____
QA/QC Review: <u>[Signature]</u>	Date: _____	Time: _____

IATL - [Signature]

Archived/Released: _____ Date: _____ QA/QC InterLAB Use: _____ Time: _____

Supplemental Asbestos Chain of Custody

Project Number:

13064

Number of Samples:

15

In addition to the information provided on the laboratory chain of custody, Sigma requires the following (checked items only):

☒ When the laboratory observes an apparent discrepancy between Sigma's material description and the sample received by the laboratory, the laboratory shall flag the material description on the laboratory report and define on the laboratory report the specific discrepancy(s) noted.

☐ With the exception of drywall and joint compound samples, analyze and report each distinct and separable material layer unless otherwise instructed on the attached "Sigma Sample Material List" sheet(s). Laboratory to determine distinct and separable layers and provide layer descriptions for each individual layer.

☒ Analyze and report each distinct and separable material layer unless otherwise instructed on the attached "Sigma Sample Material List" sheet(s). Laboratory to determine distinct and separable layers and provide layer descriptions for each individual layer.

☒ Discontinue analysis of homogenous material upon determining that the material contains greater than one percent asbestos content. If the homogeneous material contains multiple layers, continue analysis of each layer until all samples have been analyzed or until it has been determined that the layer contains greater than one percent asbestos content. See item #4 for flooring system Positive Stop instructions.

For example, if Sigma submitted three roofing system samples and the top layer sample analysis revealed asbestos is present at greater than one percent, the top layer analysis would be discontinued but the underlying layer(s) analysis would continue until greater than one percent asbestos is detected or until all three underlying sample layers have been analyzed. This assumes, however, that the materials are in fact homogenous. Through microscopic examination, it may be determined by the analyst that there are additional layers not present in each sample. In that case, the individual sample layer should also be analyzed.

☒ **Flooring Systems (including floor tile systems, vinyl flooring systems, vinyl laminate systems, and stair tread systems):** Conduct analysis of the mastic layer(s) first. If analysis reveals greater than one percent asbestos content, discontinue analysis of the mastic layers and do not analyze the flooring material (tile, vinyl, laminate, etc.) Call Jeff Senn at (414) 643-4151 with specific questions.

Sigma Sample Material List

Page 1 of 1

 Project: 13064
 Building: 41 VA Milwaukee

 Date: 3-19-11
 Inspectors: PCA, TM

Sample Number	Homogenous Material Code	Homogeneous Material Description	Functional Area/ Room Number	Location within Room
01	SP I	Plaster	4599162 1st Floor	NE
02			4599163	NE
03			4599164	NE
04	MFL-1	Linoleum Floor	4599165	C
05		Brown-Tan	4599166	C
06			4599167	C
07	MFL-2	Linoleum Floor	4599168	C
08		Brown	4599169	NW
09			4599170	C
10	MRS	Roof Shingle	4599171 Exterior	Northwest
11			4599172	East Center
12			4599173	North Center
13	MB 2M	8" Brick Mortar	4599174	Northwest
14			4599175	East Center
15			4599176	North Center
16				
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19				
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APPENDIX C

Photo Documentation





CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABLIZATION
VA PROJECT: 695-11-117

- - - E N D - - -

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

BUILDING 41: REPAIR BUILDING SERVICE & ROOF TRUSS STABLIZATION
VA PROJECT: 695-11-117

SECTION 02 83 33.13
LEAD BASED PAINTS

TABLE OF CONTENTS

1.0 - LEAD BASED PAINTS REPORT

**SECTION 02 83 33.13A
LEAD-BASED PAINT REMOVAL AND DISPOSAL**

XRF LEAD-BASED PAINT ASSESSMENT SUMMARY

**Chequamegon Bay Engineering
1109 North Mayfair Road, Suite 208
Wauwatosa, Wisconsin**

**Veterans Affairs Medical Center - Milwaukee, WI
Building 41 - Structural Stabilization**

Project #13064

Sample Number	Functional Area / Room	Location in Room	Substrate	Color of Paint	Lead Content (mg/cm ²)	LBP Yes/No
Calibration	NA	NA	Standard	Calibration	1.1	NA
Calibration	NA	NA	Standard	Calibration	1.0	NA
01	--	East	Plaster	Blue	0.03	No
02	--	Center	Wood	Brown	0.07	No
03	--	Center	Wood	Black	0.02	No
04	--	--	--	--	--	--
05	--	--	--	--	--	--
06	--	--	--	--	--	--
07	--	--	--	--	--	--

Notes:

1. Samples were analyzed on March 19, 2012.
2. Lead analysis conducted using a Niton X-Ray Fluorescence instrument.
3. Components that have > 0.7 mg/cm² lead are considered Lead-Based Paint in the State of Wisconsin. These materials may be regulated by the WDNR waste disposal regulations. Activities which disturb components determined to contain lead are regulated by OSHA.
4. NA = Not Applicable

- - - E N D - -

SECTION 04 05 13
MASONRY MORTAR

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies mortar materials and mixes. Intent of section is to create a mortar matching existing un-weathered historic mortar in color, composition, hardness and strength.

1.2 RELATED WORK:

- A. Section 04 20 00, UNIT MASONRY.
- B. Section 04 05 31, MASONRY TUCKPOINTING

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Cement, each kind.
 - 2. Hydrated lime.
- C. Final mortar proportions resulting from Contractors sampling, testing and matching of existing historic mortar, including sand gradation, to be used in all masonry work

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.
- B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C40-04.....Organic Impurities in Fine Aggregates for
Concrete
 - C91-05.....Masonry Cement
 - C144-04.....Aggregate for Masonry Mortar
 - C150-09.....Portland Cement
 - C207-06.....Hydrated Lime for Masonry Purposes
 - C270-10.....Mortar for Unit Masonry
 - C780-10.....Preconstruction and Construction Evaluation of
Mortars for Plain and Reinforced Unit Masonry

PART 2 - PRODUCTS

2.1 HYDRATED LIME

- A. Hydrated Lime shall be pressure hydrated non-air entrained and conform to ASTM C-207, Type S.

2.2 AGGREGATE FOR MASONRY MORTAR

- A. Owner has conducted preliminary tests for aggregate size and gradation, and a petrographic analysis of the existing mortar. These reports are available from COTR upon request.
- B. As part of Base Bid, Contractor shall conduct further tests as deemed necessary on samples of existing mortar to confirm aggregate gradation. Results of those tests shall be supplied to COTR.
- C. Aggregate shall be natural river sand (manufactured or masons sand is not permitted), clean, free from loam, silt, vegetable matter, salts and other injurious substances:
 - a. Sand shall be from one source.
 - b. Sand gradation shall be sieved to achieve gradation matching existing construction.
 - c. Color value of sand established in accordance with ASTM C40 shall match color value of original sand aggregate as closely as possible.

2.3 PORTLAND CEMENT

- A. Portland cement shall conform to ASTM C-150 Type 1. Only one brand and type of Portland cement from one source shall be used for the Work. Brands are subject to approval for color match of existing mortar. Use of either white or gray Portland cement, or a mix of white and gray Portland cements is permitted if required for color match of existing mortar.

2.4 WATER

- A. Potable, free of substances that are detrimental to mortar, masonry, and metal.

2.5 MASONRY MORTAR

- A. Pre-packaged mortar mixes are not acceptable. Mortar shall be mixed from individual constituent parts on the jobsite.
- B. Masonry mortar is anticipated to be similar to Type O based on the historical period of original construction. Preliminary proportions of mortar shall be (1-2-9) of Portland cement, hydrated lime and sand respectively. Intent of preliminary proportions noted is to establish a baseline for matching color, composition, hardness and strength of existing mortar as closely as possible.

- C. Preliminary proportions of mortar shall be used only as a beginning point for matching existing historical mortar. Acceptability of mortar proportions based on appearance will be determined by COTR, as described in 04 05 31 Masonry Tuckpointing. After mortar has been determined by COTR to satisfactorily match existing texture and color, the prism strength of mortar and masonry units shall be confirmed by prism test as described in 04 20 00 Unit Masonry.
- D. Final proportions of mortar judged visually acceptable and meeting strength requirements shall be submitted for written approval.
- E. Admixtures:
 - 1. Do not use mortar admixtures.
 - 2. Do not use antifreeze compounds.

PART 3 - EXECUTION

3.1 GENERAL

- A. Do not begin any repair work requiring mortar until receipt of written approval of mortar mix.

3.2 MIXING

- A. Mix in a mechanically operated mortar mixer.
 - 1. Mix mortar for at least three minutes but not more than five minutes.
- B. Measure ingredients by volume. Measure by the use of a container of known capacity.
- C. Mix water with dry ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.
- D. Mortar that has stiffened because of loss of water through evaporation may be re-tempered by adding water to restore to proper consistency and workability. Discard mortar that has reached its initial set or has not been used within two hours.

3.3 MORTAR USE LOCATION

- A. Use approved mortar at all locations, including repair and rebuilding of existing walls, and for tuckpointing.

- - - E N D - - -

SECTION 04 05 31
MASONRY TUCKPOINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies requirements for tuck pointing of existing masonry.

1.2 RELATED WORK

- A. Mortar: Section 04 05 13, MASONRY MORTAR.
B. Masonry Units: Section 04 20 00 UNIT MASONRY

1.3 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
C67-07.....Brick and Structural Clay Tile, Sampling and Testing
C216-07.....Facing Brick (Solid Masonry Units Made From Clay or Shale)
C270-07.....Mortar for Unit Masonry
- C. International Masonry Institute: Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- D. Preservation Brief 2: "Repointing Mortar Joints in Historic Masonry Buildings", published by the United States Department of the Interior, Cultural Resources.

1.4 QUALITY CONTROL

- A. All personnel employed by the General Contractor or Masonry Contractor to perform any work under this section, shall be qualified by training and experience to perform the work, and shall specifically have a minimum of two years of documented experience in the tuckpointing repair of masonry in buildings of similar age and character.

PART 2 - PRODUCTS

2.1 TUCK POINTING MORTAR

- A. Tuck pointing mortar shall be as described in 04 05 13 MASONRY MORTAR

2.2 REPLACEMENT MASONRY UNITS

- A. Face Brick:
1. Reclaimed Cream City Brick from this site or other locations. In good condition; broken and cracked brick are not acceptable.

2. Size: Modular (to match existing)
3. Color: Range - yellow to light tan.

PART 3 - EXECUTION

3.1 TEST PANEL REQUIREMENTS

- A. Test Panel to be 3 to 4 square feet in area. Test Panel location indicated on drawings.
- B. Test Panel to be inspected and approved by COTR before proceeding.
- C. Test Panel to match appearance, tooling and composition of original unweathered construction.
- D. Test Panel shall be constructed by the same personnel that will be performing the specified work of the section on the building.
- E. Remainder of tuckpointed masonry must match the test panel approved by COTR.

3.2 CUT OUT OF EXISTING MORTAR JOINTS

- A. Cut out existing mortar joints (both bed and head joints) and carefully remove by means of a toothing chisel or a special pointer's grinder, to a uniform depth of to 19 mm (3/4-inch), or until sound mortar is reached, whichever is greater. Mortar removal must not damage or mark edges or surfaces of existing masonry units to remain.
- B. Remove dust and debris from the joints by brushing, blowing with air or rinsing with water. Do not rinse when temperature is below freezing.

3.3 JOB CONDITIONS

- A. Protection: Protect newly pointed joints from rain, until pointed joints are sufficiently hard enough to prevent damage.
- B. Cold Weather Protection:
 1. Tuck pointing may be performed in freezing weather when methods of protection are utilized.
 2. Comply with applicable sections of "Recommended Practices for Cold Weather Construction" as published by International Masonry Industry All Weather Council.
 3. Existing surfaces at temperatures to prevent mortar from freezing or causing other damage to mortar.

3.4 MIXING OF TUCK POINTING MORTAR

- A. Mix dry ingredients with enough water to produce a damp mixture of workable consistency which will retain its shape when formed into a ball.
- B. Allow mortar to stand in dampened condition for one to 1-1/2 hours.
- C. Add water to bring mortar to a workable consistency prior to application.

3.5 INSTALLATION OF TUCK POINTING MORTAR

- A. Immediately prior to application of mortar, dampen joints to be tuck pointed. Prior to application of pointing mortar, allow masonry units to absorb surface water.
- B. Tightly pack mortar into joints in thin layers, approximately 6 mm (1/4-inch) thick maximum.
- C. Allow layer to become "thumbprint hard" before applying next layer.
- D. Pack final layer flush with surfaces of masonry units. When mortar becomes "thumbprint hard", tool joints.

3.6 TOOLING OF JOINTS

- A. Tool joints in patch work with a jointing tool to match the existing surrounding joints.

3.7 REPLACEMENT OF MASONRY UNITS

- A. Cut out mortar joints surrounding masonry units that are to be removed and replaced.
 - 1. Wherever possible, units to be removed should be removed without damage to the units for potential reuse elsewhere; however, where whole removal is impossible, brick units may be broken.
 - 2. Once the units are removed, carefully remove by means of a toothing chisel or a special pointer's grinder the old mortar and remove dust and debris. Mortar removal must not damage or mark edges or surfaces of existing masonry units to remain.
- B. Dampen surfaces of the surrounding units before new units are placed.
 - 1. Allow existing masonry to absorb surface moisture prior to starting installation of the new replacement units.
 - 2. Butter contact surfaces of existing masonry and new replacement masonry units with mortar.
 - 3. Center replacement masonry units in opening and press into position.
 - 4. Remove excess mortar with a trowel.
 - 5. Point around replacement masonry units to ensure full head and bed joints.
 - 6. When mortar becomes "thumbprint hard", tool joints.

3.8 CLEANING

- A. Clean exposed masonry surfaces on completion.
- B. Remove mortar droppings and other foreign substances from wall surfaces.
- C. First wet surfaces with clean water, then wash down with a solution of soapless detergent specially prepared for cleaning brick.
- D. Brush with stiff fiber brushes while washing, and immediately thereafter hose down with clean water.

CLEMENT J. ZABLOCKI MEDICAL CENTER
MILWAUKEE, WI

DEPARTMENT OF VETERANS AFFAIRS

REPAIR BUILDING SERVICE & ROOF TRUSS STABILIZATION
VA PROJECT: 695-11-117

- E. Free clean surfaces from traces of detergent, foreign streaks or stains.
Protect materials during cleaning operations including adjoining construction.
- F. Use of muratic acid for cleaning is prohibited.

- - - E N D - - -

SECTION 04 20 00
UNIT MASONRY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies requirements for rebuilding of masonry unit walls.

1.2 RELATED WORK

- A. Mortar: Section 04 05 13, MASONRY MORTAR.
- B. Test Panel: Section 04 05 31 MASONRY TUCKPOINTING
- C. Flashing: Section 07 60 00, FLASHING AND SHEET METAL.
- D. Sealants and sealant installation: Section 07 92 00, JOINT SEALANTS.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Samples:
 - 1. Face brick, sample panel, 200 mm by 400 mm (8 inches by 16 inches,) showing full color range and texture of bricks, bond, and proposed mortar joints.

1.4 QUALITY CONTROL

- A. All personnel employed by the General Contractor or Masonry Contractor to perform any work associated with the brick masonry, including but not limited to preparation of prisms for testing, preparation of mortar, tuckpointing, and brick masonry installation, shall be qualified by training and experience to perform the work, and shall specifically have a minimum of two years of documented experience in the installation and repair of masonry in buildings of similar age and character.

1.5 PRISM TEST

- A. Before starting masonry work, construct two prisms with cleaned brick salvaged from existing building, and two prisms with brick salvaged by material suppliers from offsite locations and proposed for use as a substitute for existing damaged brick.
 - 1. Construct prisms with mortar proportions and construction methods matching existing construction as closely as possible, and approved by COTR as described in 04 05 13 Masonry Mortar.
 - 2. For prisms constructed with cleaned brick salvaged from existing building, use undamaged brick masonry units from both interior and exterior wythes. Carefully remove existing hardened mortar from

- units utilizing hand tools only. No abrasive blasting, chemicals, or any process that may damage or mark the existing brick may be used.
3. For prisms constructed with brick salvaged from other jobsites by material suppliers, use masonry units from random cubes of units delivered on site.
 4. Prisms shall be constructed on site by same personnel that will perform the specified work of this section on the building. Store prisms in a secure location until they have cured sufficiently to permit transportation without damage. Transport prisms to Testing Laboratory for final curing.
 5. Test prisms in accordance with ASTM C1314. Verify that the average prism strength of the tests for each type of brick is at least equal to 1000 psi, and is no greater than the prism strength of existing brick masonry (1350 psi). Documentation of testing program and results for existing brick masonry prism and mortar pin tests is on file with Owner. Contact AE if prism strength tests do not fall within limits indicated.

1.6 WARRANTY

- A. Warrant exterior masonry walls against moisture leaks and subject to terms of "Warranty of Construction", FAR clause 52.246-21, except that warranty period shall be five years.

1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C62-0.....Building Brick (Solid Masonry Units Made From Clay or Shale)
 - C67-09.....Sampling and Testing Brick and Structural Clay Tile
 - C216-10.....Facing Brick (Solid Masonry Units Made From Clay or Shale)
 - F1667-11.....Fasteners: Nails, Spikes and Staples
 - C1314-11.....Standard Test Method for Compressive Strength of Masonry Prisms
- C. Masonry Industry Council:
 - Hot and Cold Weather Masonry Construction Manual-98 (R2000).
- D. Brick Industry Association - Technical Notes on Brick Construction (BIA):

- 11-2001.....Guide Specifications for Brick Masonry, Part I
- 11A-1988.....Guide Specifications for Brick Masonry, Part II
- 11B-1988.....Guide Specifications for Brick Masonry, Part III
Execution
- 11C-1998.....Guide Specification for Brick Masonry Engineered
Brick Masonry, Part IV
- 11D-1988.....Guide Specifications for Brick Masonry
Engineered Brick Masonry, Part IV continued
- E. Masonry Standards Joint Committee; Specifications for Masonry Structures
TMS 602-08/ACI 530.1-08/ASCE 6-08 (2008 MSJC Book Version TMS-0402-08).

PART 2 - PRODUCTS

2.1 BRICK

- A. Face Brick and Building Brick (for backup and interior wythe work):
 - 1. Reclaimed Cream City Brick from this site or other locations. In good condition; broken and cracked brick are not acceptable.
 - 2. Size: Modular (to match existing)
 - 3. Color: Range - yellow to light tan.

2.2 ACCESSORIES

- A. Masonry Cleaner:
 - 1. Detergent type cleaner selected for each type masonry used.
 - 2. Acid cleaners are not acceptable.
 - 3. Use soapless type specially prepared for cleaning brick or concrete masonry as appropriate.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Protection:
 - 1. Cover tops of walls with nonstaining waterproof covering, when work is not in progress. Secure to prevent wind blow off.
 - 2. On new work built into existing building, protect all elements of existing building from mortar droppings, and other materials that will stain face.
- B. Cold Weather Protection:
 - 1. Masonry may be laid in freezing weather when methods of protection are utilized.
 - 2. Comply with MSJC and "Hot and Cold Weather Masonry Construction Manual".

3.2 CONSTRUCTION TOLERANCES

- A. Survey all exposed faces of existing brick masonry to be removed, and adjacent brick masonry to remain as necessary to document coursing, joint thickness, unit orientation, wall projections, piers, corbels, cornices, overhangs, and all other items necessary to document existing construction. Record shall be in the form of photographs and representative measured drawings, and copies shall be provided to the COTR.
- B. Tolerances for completed wall shall be those necessary to match existing construction as closely as possible. Construction tolerances shall match existing construction, including but not limited to the following:
 - 1. Plumbness and levelness of individual masonry units
 - 2. Existing building lines, including mortar joints and corbel lines
 - 3. Cross sectional dimensions of projecting piers, corbels and cornices
 - 4. Opening dimensions
- C. Intent is that rebuilt portions of wall shall match appearance and character of existing wall construction as closely as possible, including variations in coursing, corbelling, joint thickness and other elements.

3.3 INSTALLATION GENERAL

- A. Keep finish work free from mortar smears or spatters, and leave neat and clean.
- B. Tooling Joints:
 - 1. Do not tool until mortar has stiffened enough to retain thumb print when thumb is pressed against mortar.
 - 2. Tool while mortar is soft enough to be compressed into joints and not raked out.
 - 3. Finish joints in exterior face masonry work with a jointing tool, and provide smooth, water-tight joint to match existing construction.
 - 4. Tool Exposed interior joints in finish work to match existing construction.
- C. Wall Units:
 - 1. Lay out field units to match existing construction.
 - 2. Align head joints of alternate vertical courses consistent with existing construction.
 - 3. Use no piece shorter than 100 mm (4 inches) long.

D. Before connecting new masonry with previously laid, remove loosened masonry or mortar, and clean and wet work in place as specified under wetting.

E. Wetting and Wetting Test:

1. Test and wet brick in accordance with BIA 11B.

3.4 BRICKWORK

A. Lay clay brick in accordance with BIA Technical Note 11 series.

B. Laying:

1. Lay brick in running bond with course of masonry bonded at corners unless shown otherwise. Match bond of existing building.

2. Maintain bond pattern to match existing.

3. Do not use brick smaller than half-brick at any angle, corner, break or jamb.

4. Where length of cut brick is greater than one half but less than a whole brick, maintain the vertical joint location of such units.

5. Lay exposed brickwork joints symmetrical about center lines of openings.

6. Build solid brickwork as required for anchorage of items.

C. Joints:

1. Exterior and interior joint widths: Lay joints to match existing construction.

D. Solid Exterior Walls:

1. Build with 100 mm (4 inches) of nominal thick facing brick 100 mm (4 inches) nominal thick face brick to match existing wall width.

2. Parging:

a. For solid masonry walls, lay backup to height of six brick courses, parge backup with 13 mm (1/2 inch) of mortar troweled smooth; then lay exterior wythe to height of backup. Repeat for each wythe.

3.5 CLEANING AND REPAIR

A. General:

1. Clean exposed masonry surfaces on completion.

2. Protect adjoining construction materials and landscaping during cleaning operations.

3. Remove mortar droppings and other foreign substances from wall surfaces.

B. Brickwork:

1. First wet surfaces with clean water, then wash down with a solution of soapless detergent. Do not use muriatic acid.

2. Brush with stiff fiber brushes while washing, and immediately thereafter hose down with clean water.
3. Free clean surfaces of traces of detergent, foreign streaks, or stains of any nature.

3.6 WATER PENETRATION TESTING

- A. In the presence of COTR, test solid exterior masonry walls for water penetration.
- B. Direct water on masonry for a period of one hour at a time when wind velocity is less than five miles per hour.
- C. Should moisture appear on inside of walls tested, make additional tests at other areas as directed by COTR.
- D. Correct the areas showing moisture on inside of walls, and repeat test at repaired areas, to insure that moisture penetration has been stopped.

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SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies wood blocking, heavy-timber framing, light wood construction, sheathing and rough hardware.

1.2 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, pertaining to necessary truss and framing repair and replacement.
- B. Qualifications of timber rehabilitation contractor documenting required experience and documenting specific project experience on no less than three projects of similar size and scope.
- C. Preliminary repair intent report.
- D. Shop Drawings documenting intended repair and connection details, fasteners and dimensions.
- E. Final repair report

1.3 QUALITY ASSURANCE FOR FIELD REPAIR OF HEAVY TIMBER TRUSSES:

- A. General
 - 1. General Contractor shall retain a qualified timber rehabilitation contractor to perform design, fabrication and erection work described in Drawings and Specifications for repair of the existing heavy timber trusses.
 - 2. Timber rehabilitation contractor shall have a minimum of five years of continuous experience in the evaluation and repair of timber structural systems, members and connections similar to those encountered on this project.
- B. Design Confirmation:
 - 1. Repair design shall be performed by or under the supervision of a Registered Engineer in the State of Wisconsin.
 - 2. Prior to proceeding with shop drawings or repairs, timber rehabilitation contractor shall prepare and submit for approval a preliminary repair intent report documenting the intended heavy timber truss repair approach. Report shall indicate that the work will be performed in conformance with the design described in the Contract Documents, or propose specific, limited alterations to the work described in the Contract Documents and the reasons for the proposed alterations. Proposed alterations substantially altering

the design intent of the construction documents may not be submitted, and will not be considered. Any proposed alterations must consider the historic nature of the building, and must be approved prior to incorporation in the repair.

3. Design repairs for loads indicated on Drawings.
4. Basis for design of repairs shall be that existing wood material has Reference Design Values that, when modified by all applicable Adjustment Factors, do not exceed the following;

$F_b = 1,350 \text{ psi}$

$F_t = 800 \text{ psi}$

$F_c = 1,350 \text{ psi.}$

Specific gravity, G , shall be assumed to be between 0.42 and 0.48 (inclusive of the decimal values indicated); this corresponds to Species Group C. For the purpose of the tension-on-net-section check, the value used for tension stress F_t (including all applicable adjustment factors) shall be 800 psi.

5. Repair design shall include procedure for protecting the existing historic structure throughout the repair process.
6. Specific repair personnel shall be qualified by training and experience to perform the repairs. The timber rehabilitation contractor's engineer shall make periodic inspections of the work to certify that the work is accomplished in conformance with the approved repair approach.
7. Upon completion of the work, timber rehabilitation contractor shall submit a final repair report indicating that the work was performed in conformance with the approved repair design.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect lumber and other products from dampness both during and after delivery at site.
- B. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- C. Stack other board products so as to prevent warping.
- D. Locate stacks on well drained areas, supported at least 150 mm (6 inches) above grade and cover with well ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. International Building Code (IBC) 2006 with Wisconsin Amendments:
Chapter 23 Wood
- C. American Forest and Paper Association (AFPA):
National Design Specification for Wood Construction
NDS-05.....Conventional Wood Frame Construction
- D. American Society of Mechanical Engineers (ASME):
B18.2.1-96(R2005).....Square and Hex Bolts and Screws
B18.2.2-87.....Square and Hex Nuts
B18.6.1-97.....Wood Screws
B18.6.4-98(R2005).....Thread Forming and Thread Cutting Tapping Screws
and Metallic Drive Screws
- E. American Society for Testing and Materials (ASTM):
A653/A653M-10.....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process
D143-09.....Small Clear Specimens of Timber, Method of Testing
D1760-01.....Pressure Treatment of Timber Products
D2559-10.....Adhesives for Structural Laminated Wood Products for Use under Exterior (Wet Use) Exposure Conditions
D3498-11.....Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems
F844-07.....Washers, Steel, Plain (Flat) Unhardened for General Use
F1667-08.....Nails, Spikes, and Staples
- F. Commercial Item Description (CID):
A-A-55615.....Shield, Expansion (Wood Screw and Lag Bolt Self Threading Anchors)
- G. U.S. Department of Commerce Product Standard (PS)
PS 1-95.....Construction and Industrial Plywood
PS 20-05.....American Softwood Lumber Standard

PART 2 - PRODUCTS**2.1 LUMBER:**

A. Unless otherwise specified, each piece of lumber shall bear grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced.

1. Identifying marks in accordance with rule or standard under which material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
2. Inspection agency for lumber approved by the Board of Review, American Lumber Standards Committee, to grade species used.

B. Structural Members:

1. For general-use, species and grade designation as indicated on structural documents; having design stresses as referenced in AFPA, National Design Specification for Wood Construction.
2. For replacement of heavy-timber members, replacement material is to be graded per approved Grading Rules Agency with corresponding National Design Specification Reference Design Values for Posts and Timbers meeting or exceeding the following:

$F_b = 1,750 \text{ psi}$

$F_t = 1,150 \text{ psi}$

$F_c = 1,350 \text{ psi}$

Adjustment factors such as load and duration factor may not be used in meeting these requirements. Material may be from new or salvaged source. Specific gravity, G , shall be equal to 0.49 or higher.

C. Lumber Other Than Structural:

1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.
2. Framing Lumber: Minimum extreme fiber stress in bending of 1100.
3. Furring, blocking, nailers and similar items 100 mm (4 inches) and narrower Standard Grade; and, members 150 mm (6 inches) and wider, Number 2 Grade.

D. Sizes:

1. Conforming to Prod. Std., PS20.
2. Size references as indicated on plans are subject to manufacturing tolerances allowed by standard under which produced.

E. Moisture Content:

1. At time of delivery and maintained at the site.

2. Boards and lumber 50 mm (2 inches) and less in thickness: 6% to 10% moisture content. Intent is to match moisture content of in-place, seasoned, non-exposed-to-weather materials within +/- 2%. If on-site moisture content testing indicates that 6%-10% range for new materials is not appropriate, adjust as necessary. Moisture content not to exceed 19%.
3. Timbers over 50 mm (2 inches) thick: 6% to 10% moisture content. Intent is to match moisture content of in-place, seasoned, non-exposed-to-weather materials within +/- 2%. If on-site moisture content testing indicates that 6%-10% range for new materials is not appropriate, adjust as necessary. Moisture content not to exceed 19%.

F. Preservative Treatment:

1. Treat wood members and plywood exposed to weather; sills and sole plates that are less than 600 mm (24 inches) from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.
2. Treat other members specified as preservative treated (PT).
3. Preservative treat by the pressure method complying with ASTM D1760, except any process involving the use of Chromated Copper arsenate (CCA) for pressure treating wood is not permitted.
4. Treat fresh cut faces of existing timber trusses, and fresh cut faces of replacement timber truss elements with a borate based liquid. Acceptable products: Penetreat Borate Wood Preservative or equal.
5. Treat bearing block with borate based preservative rods. Acceptable products: Bor8 Rods or equal.

2.2 LAMINATED VENEER LUMBER (LVL)

- A. Bonded jointed wood veneers with ASTM D2559 adhesive.
- B. Scarf jointed wood veneers with grain of wood parallel.
- C. Sizes as shown. Properties equal to or exceeding;
Fb = 3,100 psi
Modulus of Elasticity = 2.0×10^6 psi.

2.3 WOOD DECKING

- A. Solid sawn lumber to match species and grade of existing nominal 5"x 1" tongue and groove decking boards.
- B. Comply with AITC 112.
- C. Provide wood decking with 15% maximum moisture content at time of dressing.
- D. Decking shall be select grade, and shall bear a factory marked with grade stamp of grading agency

2.4 ROUGH HARDWARE AND ADHESIVES:

A. Miscellaneous Bolts:

1. Bolts: ANSI/ASME Standard B18.2.1.
2. Lag Screws: ANSI/ASME Standard B18.2.1.

B. Washers

1. ASTM F844.
2. Use zinc or cadmium coated steel or cast iron for washers exposed to weather.

C. Screws:

1. Wood to Wood: ANSI B18.6.1 or ASTM C1002.

D. Nails:

1. Size and type best suited for purpose unless noted otherwise. Use plated nails or zinc-coated nails for nailing wood work exposed to weather and on roof blocking.
2. ASTM F1667:
 - a. Common: Type I, Style 10.
 - b. Use special nails designed for use with ties, strap anchors, framing connectors, joists hangers, and similar items. As indicated on structural drawings, but nails not less than 32 mm (1-1/4 inches) long, 8d and deformed or annular ring shank.

E. Framing and Timber Connectors:

1. Steel plates for heavy-timber repair work:
 - a. Shape, thickness and grade as indicated on construction documents.
 - b. If not otherwise indicated, material to be ASTM A36.
 - c. Shop-primed finish if not indicated otherwise on structural drawings.
2. Connectors for rough-carpentry work: if not specified by manufacturer and connector designation on structural drawings, fabricate of ASTM A446, Grade A, steel sheet not less than 1.3 mm (0.052 inch) thick. Apply standard plating to steel connectors after punching, forming and assembly of parts.
3. Joist Hangers:
 - a. if not specified on structural drawings by manufacturer and hanger designation, fabricated of 1.6 mm (0.063 inch) minimum thick sheet, U design.
 - b. heavy duty hangers, if not specified on structural drawings by manufacturer and hanger designation, fabricated of minimum 2.7 mm (0.108 inch) thick sheet, U design with bent top flange to lap over beam.

F. Adhesives:

1. For field-gluing lumber to lumber over-lap splice connections: construction adhesive per ASTM D3498.
2. For fastening metal anchors or threaded rods into multi-whythe brick walls: injection adhesive shall be packaged in side by side refill packs which keep separate component A and component B. Side by side packs shall be designed to accept static mixing nozzle which thoroughly blends component A and component B and allows injection directly into a mesh screen tube. Only injection tools and static mixing nozzles as recommended by the manufacturer shall be used. Manufacturer's instructions shall be followed. Injection adhesive shall be formulated to include resin, hardener, cement and water to provide optimal curing speed as well as high strength and stiffness. Injection adhesive shall be HIT HY 20 hybrid adhesive system by Hilti.

G. Mesh Screen Tubes:

1. For fastening metal anchors or threaded rods into multi-whythe brick walls using adhesive;
2. Shall be formed into a cylindrical shape, with one end closed to prevent extrusion of adhesive through that end. Screen tube shall be manufactured with a mesh size, length and diameter as specified by the adhesive manufacturer. Mesh shall be manufactured from AISI 304 stainless steel;
3. Screens shall be the Hilti HIT system as manufactured by Hilti.

H. Anchor Rods:

1. For embedment into multi-whythe brick walls using adhesive;
2. Shall be manufactured to meet the requirements of AISI 304 or AISI 316 stainless steel, meeting the requirements of ASTM F 593 (condition CW);
3. Furnish nuts and washers of the same material. All nuts shall meet the requirements of ASTM F 594;
4. Anchor rods shall be Hilti HAS-E as manufactured by Hilti.

I. Threaded rod for embedment into multi-whythe brick walls:

1. Shall be manufactured to meet the requirements of AISI 304 or AISI 316 stainless steel;
2. Furnish nuts and washers of the same material. All nuts shall meet the requirements of ASTM F 594.

J. Shear Plate Connectors:

1. Provide 4" diameter Malleable Iron Type Shear Plates manufactured according to Grade 32510 of ASTM Standard A47;
2. Each casting shall consist of a perforated round plate with a flange around the edge extending at right angles to the face of the plate and projecting from one face only, the plate portion having a central bolt hole with an integral hub extending from the same face as the flange.

PART 3 - EXECUTION

3.1 INSTALLATION OF TRUSS AND BEAM REPAIRS

- A. Prior to installing bearing block, install (2) 3/4"x3" Bor8 rods in 13/16"x8" hole centered in outside face of bearing block. Install rods in accordance with manufacturer's instructions. Plug hole with 13/16"x 1 3/4" wooden dowel of same material as bearing block and treated with a borate based liquid preservative prior to installation.
- B. Treat entire surface of bearing block and truss within 6" of exterior masonry wall with a borate based liquid preservative prior to installation.
- C. Treat all freshly cut faces of existing timber truss and fresh cut faces of replacement timber truss elements with a borate based liquid preservative prior to completing described repairs. Apply treatment at rates and in accordance with manufacturer's recommendations.
- D. Install truss and beam repairs as described in the Drawings and approved repair intent report.

3.2 INSTALLATION OF FRAMING AND MISCELLANEOUS WOOD MEMBERS:

- A. Conform to applicable requirements of the following:
 1. AFPA National Design Specification for Wood Construction for wood framing and connections.
 2. AITC Timber Construction Manual for heavy timber construction.
 3. International Building Code (IBC) 2006 with Wisconsin Amendments for nailing and framing unless specified otherwise.
- B. Fasteners:
 1. Nails.
 - a. Nail in accordance with the Nailing Schedule as specified in International Building Code (IBC) 2006 with Wisconsin Amendments. Select nail size and nail spacing sufficient to develop adequate strength for the connection without splitting the members.
 - b. Use special nails with framing connectors.

- c. For individual decking boards that are not part of an area replacement field, select length of nails sufficient to extend 25 mm (1 inch) into supports.
 - d. Use eight penny or larger nails for nailing through 25 mm (1 inch) thick lumber and for toe nailing 50 mm (2 inch) thick lumber.
 - e. Use 16 penny or larger nails for nailing through 50 mm (2 inch) thick lumber.
 - f. Select the size and number of nails in accordance with the Nailing Schedule except for special nails with framing anchors.
2. Bolts:
- a. Fit bolt heads and nuts bearing on wood with washers.
 - b. Countersink bolt heads flush with the surface of nailers.
 - c. Embed in concrete and solid masonry or use expansion bolts. Special bolts or screws designed for anchor to solid masonry or concrete in drilled holes may be used.
 - d. Use bolts to steel over 2.84 mm (0.112 inch, 11 gage) in thickness. Secure wood nailers to vertical structural steel members with bolts, placed one at ends of nailer and 600 mm (24 inch) intervals between end bolts. Use clips to beam flanges.
3. Screws to Join Wood:
- a. Where shown or option to nails.
 - b. ASTM C1002, sized to provide not less than 25 mm (1 inch) penetration into anchorage member.
 - c. Spaced same as nails.
4. Installation of Timber Connectors:
- a. Conform to applicable requirements of the NFPA National Design Specification for Wood Construction.
 - b. Fit wood to connectors and drill holes for fasteners so wood is not split.
- C. Set sills or plates level as described in Drawings.
- 1. Unless noted otherwise, space anchor bolts 1200 mm (4 feet) on centers between ends and within 150 mm (6 inches) of end. Stagger bolts from side to side on plates over 175 mm (7 inches) in width.
 - 2. Use shims of slate, tile or similar approved material to level wood members resting on concrete or masonry. Do not use wood shims or wedges.
 - 3. Closely fit, and set to required lines.

D. Do not cut notch, or bore new or existing structural members for passage of ducts, wires, bolts, pipes, conduits or to accommodate other work. Repair or replace miscut, misfit or damaged work.

E. Blocking:

1. Install blocking where shown.
2. Use longest lengths practicable.
3. Layers of Blocking or Plates:
 - a. Stagger end joints between upper and lower pieces.
 - b. Nail at ends and not over 600 mm (24 inches) between ends.
 - c. Stagger nails from side to side of wood member over 125 mm (5 inches) in width.

F. Ceiling Framing:

1. Set with crown edge up.
2. Bear on not less than 100 mm (4 inches) on concrete and masonry, and 38 mm (1-1/2 inches) on wood and metal unless shown otherwise.
3. Support joist, trimmer joists, headers, and beams framing into carrying members at same relative levels on joist hangers unless shown otherwise.
4. Lap and spike wood joists together at bearing, or butt end-to-end with scab ties at joint and spike to plates. Scab tie lengths not less than 200 mm (8 inches) lap on joist ends. Install wood I beam joists as shown.
5. Frame openings with headers and trimmer joist. Double headers carrying more than two tail joists and trimmer joists supporting headers carrying more than one tail joist unless otherwise shown.
6. Drive nails through headers into joists using two nails for 50 mm by 150 mm (2 inch by 6 inch); three nails for 50 mm by 200 mm (2 inch by 8 inch) and four nails for 50 mm by 250 mm (2 inch by 10 inch) and over in size.
7. Install nearest joist to double headers and spike joist to both header members before trimmer joist is installed and secured together.

G. Bridging:

1. Use 25 mm by 75 mm (1 inch by 3 inch) lumber with ends beveled for slope. Option: Metal bridging may be used for wood bridging.
2. Install one row of bridging for joist spans over 2400 mm (8 feet), but less than 4800 mm (16 feet) long; install two rows for spans over 4800 mm (16 feet) long.

3. Install an extra row of bridging between trimmer and next two joists if header is more than 600 mm (2 feet) from end of trimmer or from regular row of bridging.
4. Secure with two nails at ends.
5. Leave bottom ends loose until after subflooring or roof sheathing is installed.
6. Install single row of bridging at centerline of span and two rows at the third points of span unless otherwise shown.

H. Roof Framing:

1. Set rafters with crown edge up.
2. Form a true plane at tops of rafters.
3. Valley, Ridge, and Hip Members:
 - a. Size for depth of cut on rafters.
 - b. Straight and true intersections of roof planes.
 - c. Secure hip and valley rafters to wall plates by using framing connectors.
 - d. Double valley rafters longer than the available lumber, with pieces lapped not less than 1200 mm (4 feet) and spiked together.
 - e. Butt joint and scab hip rafters longer than the available lumber.
4. Spike to wall plate and to ceiling joists except when secured with framing connectors.
5. Frame openings in roof with headers and trimmer rafters. Double headers carrying more than one rafter unless shown otherwise.

J. Wood Decking:

1. Roof decking shall be replaced with in-kind material. Contractor shall not use plywood sheathing to replace existing tongue and groove board.
2. Where deck replacement requires removal of an area replacement field, remove boards completely to existing natural joints. To the greatest extent possible consistent with matching the existing joint pattern, lay-up shall be random length continuous (RLC) over 3 spans minimum. Decking shall be laid to disperse end joints as randomly as possible. Distance between end joints in adjacent rows (or courses) shall be two joist spaces, minimum. Distance between end joints in rows separated by only row shall be one joist space, minimum. Endspans shall be laid to eliminate end-joints in a minimum of 1/3 of the courses. Decking shall be end matched and toe-nailed within 1 foot of ends.

3. Where deck replacement requires removal of a single board, remove board completely to existing natural joint.
4. For replacement of multiple adjacent deck boards, application should be made by nailing each course to a supporting member with two 16d nails. Each course should be toe nailed to tongue side of adjacent course with 6d nails and at an angle of approximately 45 degrees starting within 1 foot of end of each piece. Toenail at 30 inch centers staggering locations in adjacent locations.
5. For individual decking boards not part of an area replacement field, application should be made by nailing each board to supporting member with two 16d nails that penetrate 25 mm (1 inch) into supports.

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**SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Partial roof tear-off, roof re-cover preparation, removal of base flashings on existing construction in preparation to receive new roofing membrane.
- B. Existing Membrane Roofing System:, Asphalt Shingles and components and accessories between and including deck and roofing membrane.

1.2 RELATED WORK

- A. Use of the premises and phasing requirements: Section 01 00 00 GENERAL REQUIREMENTS.
- B. Temporary construction and environmental-protection measures for reroofing preparation: Section 01 00 00 GENERAL REQUIREMENTS
- C. Electrical equipment disconnection and reconnection: Division 26 sections.

1.3 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.
- B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):
 - ANSI/SPRI FX-1-01(R2006) Standard Field Test Procedure for
Determining the Withdrawal Resistance of
Roofing Fasteners.
- C. ASTM International (ASTM):
 - D1079-09.....Standard Terminology Relating to Roofing and
Waterproofing
- D. FM Approvals: RoofNav Approved Roofing Assemblies and Products.
 - 4470-10.....Approved Standard for Class 1 Roof Coverings
 - 1-28-09.....Loss Prevention Data Sheet: Design Wind Loads.
 - 1-29-09.....Loss Prevention Data Sheet: Above-Deck Roof
Components
 - 1-49-09.....Loss Prevention Data Sheet: Perimeter Flashing

E. National Roofing Contractors Association: Roofing and Waterproofing Manual

1.4 MATERIALS OWNERSHIP

A. Assume ownership of demolished materials and remove from Project site and dispose of legally, unless indicated to be reused, reinstalled, or otherwise to remain Owner's property.

1.5 DEFINITIONS

A. Refer to ASTM D1079 and NRCA "The NRCA Roofing and Waterproofing Manual" for definition of terms.

1.6 QUALITY CONTROL

A. Requirements of Division 07 roofing section for qualifications of roofing system and roofing insulation Installer; work of this section shall be performed by same Installer.

1. Where Project requirements include removal of asbestos-containing material, Installer must be legally qualified to perform the required work.

2. Where Project requirements include work affecting existing roofing system to remain under warranty, Installer must be approved by warrantor of existing roofing system.

B. Regulatory Requirements: Comply with governing EPA notification regulations. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Architect-Engineer; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing.

2. Review methods and procedures related to roofing system tear-off and replacement

1.7 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Recover boards.

C. List of proposed infill materials.

- D. List of proposed temporary roofing materials.
- E. Fastener pull-out test report.
- F. Photographs or Videotape: Document existing conditions of adjacent construction including site improvements.
- G. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a licensed landfill facility.
- H. Qualification Data: For Installer.
 - 1. Certificate indicating Installer is licensed to perform asbestos abatement.
 - 2. Certificate indicating Installer is approved by warrantor of existing roofing system.

1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building below reroofing area. Conduct reroofing so Owner's operations will not be disrupted.
 - 1. Coordinate work activities daily with Owner.
 - 2. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
- B. Protect building and landscaping from damage.
- C. Maintain access to existing walkways and adjacent occupied facilities.
- D. Available Information: The following are available for Contractor reference:
 - 4. Contractor is responsible for interpretation and conclusions based upon available information.
- E. Weather Limitations: Proceed with reroofing preparation only when weather conditions permit Work to proceed without water entering existing roofing system or building.
- F. Hazardous Materials: It is not expected that Contractor will encounter hazardous materials such as asbestos-containing materials.
 - 1. Owner will remove hazardous materials before start of the Work.
 - 2. Do not disturb materials suspected of containing hazardous materials. Notify Architect-Engineer and Owner. Hazardous materials will be removed by Owner under a separate contract.
- G. Hazardous Materials: A report on the presence of hazardous materials is available to Contractor for review and use.
 - 1. Examine report to become aware of locations where hazardous materials are present.

2. Hazardous material remediation is specified elsewhere in the Contract Documents.

1.9 WARRANTY

PART 2 - PRODUCTS

2.1 INFILL MATERIALS

- A. Use infill materials matching existing membrane roofing system materials.

2.2 TEMPORARY ROOFING MATERIALS

- A. Design of temporary roofing and selection of materials are responsibilities of Contractor.

2.4 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer and compatible with components of existing and new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "RoofNav."
- C. Metal Flashing Sheet: Metal flashing sheet is specified in Section 07 60 00 SHEET METAL FLASHING AND TRIM.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect existing membrane roofing system that is indicated not to be reroofed.
1. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
1. Comply with Owner's requirements for maintaining fire watch when temporarily disabling smoke detectors.
- C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
2. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

E. Verify that rooftop utilities and service piping have been shut off before beginning the Work.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.

F. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

1. Remove all bitumen and felts.
2. Comply with FM Approvals requirements for removal of excess asphalt shingles from wood decks.
3. Remove fasteners from deck prior to installing roof.

G. Partial Roof Tear-Off: Where indicated, remove existing roofing membrane and other membrane roofing system components down to the deck.

H. Partial Roof Tear-Off: Remove existing roofing membrane and immediately check for presence of moisture by visually observing wood sheathing that will remain.

1. Coordinate with Owner's inspector to schedule times for tests and inspections immediately after membrane removal.
2. Remove rotted deck boards.. Removal will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
5. Remove fasteners from deck.

3.3 DECK PREPARATION

A. Inspect deck after tear-off or partial tear-off of membrane roofing system.

- B. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect-Engineer. Do not proceed with installation until directed by Architect-Engineer.
- C. If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect-Engineer. Do not proceed with installation until directed by Architect-Engineer.
- D. Provide additional deck securement as indicated on Drawings.
- E. Replace deck as indicated on Drawings. Replacement deck is specified in Section 06 10 00 ROUGH CARPENTRY.

3.4 INFILL MATERIALS INSTALLATION

- A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.
 - 1. Installation of infill materials is specified in Section 06 10 00 ROUGH CARPENTRY.
 - 2. Install new roofing membrane patch over roof infill area. If new roofing membrane is installed the same day tear-off is made, roofing membrane patch is not required.

3.5 TEMPORARY ROOFING MEMBRANE

- A. Install approved temporary roofing membrane over area to be reroofed.
- B. Remove temporary roofing membrane before installing new roofing membrane.
- C. Prepare the temporary roof to receive new roofing membrane according to approved temporary roofing membrane proposal. Restore temporary roofing membrane to watertight condition. Obtain approval for temporary roof substrate from roofing membrane manufacturer and Architect-Engineer before installing new roof.

3.6 ROOF RE-COVER PREPARATION

- A. Remove blisters, ridges, buckles, and other substrate irregularities from existing roofing membrane that inhibit new recover boards from conforming to substrate.
 - 2. Broom clean existing substrate.
 - 3. Coordinate with Owner's inspector to schedule times for tests and inspections before proceeding with installation of recover boards.

4. Remove materials that are rotted. Removal will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.

3.7 EXISTING BASE FLASHINGS

- A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings specified in Section 07 60 00 SHEET METAL FLASHING AND TRIM.

3.10 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION

SECTION 07 31 13
ASPHALT SHINGLES

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies organic felt and fiberglass asphalt shingles.

1.2 RELATED WORK

- A. Color of shingles: Match existing three tab shingle.
- B. Counterflashing and flashing of roof projections: Section 07 60 00,
FLASHING AND SHEET METAL.

1.3 SUMMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Shingles, each type, color and texture.
- C. Manufacturer's Literature and Data:
 - 1. Shingles, each type
 - 2. Installation instructions

1.4 DELIVERY AND STORAGE

- A. Deliver materials in manufacturer's unopened bundles or containers with the manufacturer's brand and name clearly marked thereon.
- B. Shingle bundle wrapping shall bear the label of Underwriters Laboratories, Inc.
- C. Store shingles in accordance with manufacturer's printed instructions. Store roll goods on end in an upright position.
- D. Keep materials dry, covered completely and protected from the weather.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - D226-06.....Asphalt-Saturated Organic Felt Used in Roofing
and Waterproofing
 - D1970-08.....Self-Adhering Polymer Modified Bituminous Sheet
Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 - D2178-04.....Asphalt Glass Felt used in Roofing and
Waterproofing

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D3018-03.....Class A Asphalt Shingles Surfaced with Mineral
Granules

D3462-07.....Asphalt, Shingles Made from Glass Felt and
Surfaced with Mineral Granules

F1667-05.....Driven Fasteners: Nails, Spikes, and Staples

C. Underwriter's Laboratories Inc. (UL):

UL790-04.....Fire Tests of Roof Covering

PART 2 - PRODUCTS

2.1 SHINGLES

A. Class A: (Fire resistive), per UL790. ASTM D3018, Type I and ASTM 3462, square butt for a maximum exposure of 125 mm (5 inches), headlap minimum 50 mm (2 inches), wind resistant, self sealing. Minimum weight: 10.3 Kg/sqm (210 lbs/100sft).

B. Selection to be approved by Owner's Representative.

2.2 ROOFING NAILS

A. ASTM F1667; Type I, Style 20, galvanized steel, deformed shanks, with heads 9.5 mm to 11 mm (3/8-inch to 7/16-inch) diameter.

B. Use nails 32 mm (1-1/4 inches) long for shingles and 19 mm (3/4-inch long) for felt.

2.3 ROOFING FELT

A. Fiberglass Felt: ASTM D2178.

B. Organic Felt: ASTM D226, TYPE 1.

C. Modified bitumen; ASTM D 1970.

2.4 Self-Adhering Underlayment:

A. ASTM D 1970, minimum of 40-mil-thick, slip-resisting, polyethylene-film-reinforced top surface laminated to a butyl or SBS-modified asphalt adhesive, with release paper backing; cold applied.

B. UL Class A, Class C

C. Physical Properties: Coefficient of Friction - ASTM D1984; Tensile Strength - ASTM D 412.; Elongation at Break; Permeance - ASTM E 96; Adhesion to Plywood - ASTM D 903; Tear Resistance - ASTM 4037; Thermal Stability ASTM D 1204;; ASTM D 1970.

PART 3 EXECUTION

3.1 PREPARATION

A. Roof surfaces shall be sound, reasonably smooth and free from defects which would interfere with roofing installation.

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- B. Roof accessories, vent pipes and other projections through the roof must be in place and roof flashing installed or ready for installation before laying shingles.

3.2 LAYING

- A. Lay felt under shingles over entire roof.
- B. Install asphalt felt underlayment, lapping a minimum of 100 mm (four inches) at ends, 50 mm (2 inches) at head and 300 mm (12 inches) over ridge. Extend felt 13 mm (1/2-inch) beyond edges of roof. Nail felt 125 mm (five inches) on centers along laps.
- C. At eaves, install strip of 41 Kg (90 pound) mineral surface roll roofing not less than 460 mm (18 inches) wide and starter course of roof shingles with tabs reversed. Both shall overhang lower edge of roof 13 mm (1/2-inch).
- D. Lay shingles with maximum exposure of 125 mm (5 inches). Nail shingles in accordance with manufacturer's published directions.

3.3 Self-adhering Underlayment:

- A. Lap joints in direction to shed water. Lap sides not less than 3-1/2 inches. Lap ends not less than 6 staggered not less than 24-inches between courses. Roll laps with roller. Cover underlayment within seven days. Eaves: Extend from edges of eaves 36-inches beyond interior face of exterior wall.
 - 2. Rakes: Extend from edge of rakes 24-inches beyond interior face of exterior wall.
 - 3. Valleys: Extend from lowest to highest point 36-inches on each side.
 - 4. Hips: Extend 18-inches on each side.
 - 5. Ridges: Extend 18-inches on each side.
 - 6. Sidewalls: Extend 36-inches beyond sidewalls and return vertically against sidewalls not less than 4 inches.
 - 7. Roof-Penetrating Elements: Extend 36-inches beyond penetrating elements and return vertically against penetration elements not less than 4 inches.

3.4 METAL DRIP EDGES

- A. At rakes, install metal drip edges made of stainless steel specified under Section 07 60 00, FLASHING AND SHEET METAL. Apply the metal drip edge directly over the underlayment along the rakes.

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- B. Secure metal drip edges with compatible nails spaced not more than 250 mm (10 inches) on center along the inner edges.

3.5 FLASHINGS

Provide metal flashings specified under Section 07 60 00, FLASHING AND SHEET METAL at the intersections of roofs, adjoining walls, or projections through the deck such as chimneys and vent stacks. Give careful attention to the installation of all flashings.

3.6 RIDGE

- A. Bend each shingle lengthwise down center to provide equal exposure on each side of ridge. Beginning at one end of ridge, apply shingles with maximum 125 mm (5 inches) exposure.
- B. Secure each shingle with one nail on each side, 210 mm (8-1/2 inches) back from exposed end and one inch up from edge.

3.7 VALLEY FLASHING

- A. Install metal valley flashing shown and as specified under Section 07 60 00, FLASHING AND SHEET METAL.
- B. Secure valley flashing in accordance with shingle manufacturer's printed instructions.
- C. Expose flashing in open portion of valley a minimum of 125 mm (5 inches) and lap the shingles over the flashing a minimum of 125 mm (5 inches).

- - - E N D - - -

SECTION 07 60 00
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 DESCRIPTION

Formed sheet metal work for wall and roof flashing, roof edge metal, fasciae and drainage specialties are specified in this section.

1.2 RELATED WORK

- A. Joint Sealants: Section 07 92 00, JOINT SEALANTS.
- B. Color of factory coated exterior architectural metal: match existing.

1.3 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.
- B. American Architectural Manufacturers Association (AAMA):
AAMA 621.....Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates
- C. ASTM International (ASTM):
A167-99(R2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
A653/A653M-09.....Steel Sheet Zinc-Coated (Galvanized) or Zinc Alloy Coated (Galvanized) by the Hot- Dip Process
B32-08.....Solder Metal
D173-03.....Bitumen-Saturated Cotton Fabrics Used in Roofing and Waterproofing
D1187-97(R2002).....Asphalt Base Emulsions for Use as Protective Coatings for Metal
D3656-07.....Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns
D4586-07.....Asphalt Roof Cement, Asbestos Free
- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual.
- E. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500-06.....Metal Finishes Manual
- F. Federal Specification (Fed. Spec):
A-A-1925A.....Shield, Expansion; (Nail Anchors)
UU-B-790A.....Building Paper, Vegetable Fiber

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G. International Code Commission (ICC): International Building Code,
Current Edition

1.4 PERFORMANCE REQUIREMENTS

A. Wind Uplift Forces: Resist the following forces per FM Approvals 1-49:

1. Wind Zone 1: 1.00 to 1.44 kPa (21 to 30 lbf/sq. ft.): 2.87-kPa (60-lbf/sq. ft.) perimeter uplift force, 4.31-kPa (90-lbf/sq. ft.) corner uplift force, and 1.44-kPa (30-lbf/sq. ft.) outward force.

B. WIND DESIGN STANDARD: FABRICATE AND INSTALL ROOF-EDGE FLASHINGTESTED PER ANSI/SPRI ES-1 TO RESIST DESIGN PRESSURE 1-90.1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: For all specified items, including:
 1. Flashings
 4. Gutter and Conductors
 6. Fascia-cant
- C. Manufacturer's Literature and Data: For all specified items, including:
 1. Two-piece counterflashing
 2. Thru wall flashing
- D. Certificates: Indicating compliance with specified finishing requirements, from applicator and contractor.

PART 2 - PRODUCTS

2.1 FLASHING AND SHEET METAL MATERIALS

- A. Stainless Steel: ASTM A167, Type 302B, dead soft temper.
- B. Galvanized Sheet: ASTM, A653.

2.2 FLASHING ACCESSORIES

- A. Solder: ASTM B32; flux type and alloy composition as required for use with metals to be soldered.
- B. Rosin Paper: Fed-Spec. UU-B-790, Type I, Grade D, Style 1b, Rosin-sized sheathing paper, weighing approximately 3 Kg/10 m²(6 lbs/100 sf).
- C. Bituminous Paint: ASTM D1187, Type I.
- D. Fasteners:
 1. Use stainless steel or galvanized steel.
 2. Nails:
 - c. Minimum diameter for stainless steel nails: 2 mm (0.095 inch) and annular threaded.
 - d. Length to provide not less than 22 mm (7/8 inch) penetration into anchorage.
 3. Rivets: Not less than 3 mm (1/8 inch) diameter.
 4. Expansion Shields: Fed Spec A-A-1925A.
- E. Sealant: As specified in Section 07 92 00, JOINT SEALANTS for exterior locations.
- F. Insect Screening: ASTM D3656, 18 by 18 regular mesh.
- G. Roof Cement: ASTM D4586.

2.3 SHEET METAL THICKNESS

- A. Except as otherwise shown or specified use thickness or weight of sheet metal as follows:
- B. Concealed Locations (Built into Construction):
 - 2. Stainless steel: 0.25 mm (0.010 inch) thick.
 - 4. Galvanized steel: 0.5 mm (0.021 inch) thick.
- C. Exposed Locations:
 - 2. Stainless steel: 0.4 mm (0.015 inch).
- D. Thickness of galvanized steel is specified with each item.

2.4 FABRICATION, GENERAL

- A. Jointing:
 - 1. In general, stainless steel joints, except expansion and contraction joints, shall be locked and soldered.
 - 2. Jointing of stainless steel over 0.45 mm (0.018 inch) thick shall be done by lapping, riveting and soldering.
 - 3. Joints shall conform to following requirements:
 - a. Flat-lock joints shall finish not less than 19 mm (3/4 inch) wide.
 - b. Lap joints subject to stress shall finish not less than 25 mm (one inch) wide and shall be soldered and riveted.
 - c. Unsoldered lap joints shall finish not less than 100 mm (4 inches) wide.
 - 4. Flat and lap joints shall be made in direction of flow.
 - 5. Soldering:
 - a. Pre tin both mating surfaces with solder for a width not less than 38 mm (1 1/2 inches) of stainless steel.
 - c. Treat in accordance with metal producers recommendations other sheet metal required to be soldered.
 - d. Completely remove acid and flux after soldering is completed.
- B. Expansion and Contraction Joints:
 - 1. Fabricate in accordance with the Architectural Sheet Metal Manual recommendations for expansion and contraction of sheet metal work in continuous runs.
 - 2. Space joints as shown or as specified.
 - 3. Space expansion and contraction joints stainless steel, at intervals not exceeding 7200 mm (24 feet).
 - 4. Fabricate slip-type or loose locked joints and fill with sealant unless otherwise specified.
 - 5. Fabricate joint covers of same thickness material as sheet metal served.
- C. Cleats:
 - 1. Fabricate cleats to secure flashings and sheet metal work over 300 mm (12 inches) wide and where specified.
 - 2. Provide cleats for maximum spacing of 300 mm (12 inch) centers unless specified otherwise.
 - 3. Form cleats of same metal and weights or thickness as the sheet metal being installed unless specified otherwise.
 - 4. Fabricate cleats from 50 mm (2 inch) wide strip. Form end with not less than 19 mm (3/4 inch) wide loose lock to item for anchorage.

- Form other end of length to receive nails free of item to be anchored and end edge to be folded over and cover nail heads.
- D. Edge Strips or Continuous Cleats:
1. Fabricate continuous edge strips where shown and specified to secure loose edges of the sheet metal work.
 2. Except as otherwise specified, fabricate edge strips or minimum 0.6 mm (0.024 inch) thick stainless steel.
 3. Use material compatible with sheet metal to be secured by the edge strip.
 4. Fabricate in 3000 mm (10 feet) maximum lengths with not less than 19 mm (3/4 inch) loose lock into metal secured by edge strip.
 5. Fabricate Strips for fascia anchorage to extend below the supporting wood construction to form a drip and to allow the flashing to be hooked over the lower edge at least 19 mm (3/4-inch).
 6. Fabricate anchor edge maximum width of 75 mm (3 inches) or of sufficient width to provide adequate bearing area to insure a rigid installation using 0.8 mm (0.031 inch) thick stainless steel.
- E. Drips:
1. Form drips at lower edge of sheet metal counter-flashings (cap flashings) by folding edge back 13 mm (1/2 inch) and bending out 45 degrees from vertical to carry water away from the wall.
 2. Form drip to provide hook to engage cleat or edge strip for fastening for not less than 19 mm (3/4 inch) loose lock where shown.
- F. Edges:
1. Edges of flashings concealed in masonry joints opposite drain side shall be turned up 6 mm (1/4 inch) to form dam, unless otherwise specified or shown otherwise.
 2. Finish exposed edges of flashing with a 6 mm (1/4 inch) hem formed by folding edge of flashing back on itself when not hooked to edge strip or cleat. Use 6 mm (1/4 inch) minimum penetration beyond wall face with drip for through-wall flashing exposed edge.
 3. All metal roof edges shall meet requirements of IBC, current edition.
- G. Metal Options:
1. Where options are permitted for different metals use only one metal throughout.
 2. Stainless steel may be used in concealed locations for fasteners of other metals exposed to view.

2.5 FINISHES

- A. Use same finish on adjacent metal or components and exposed metal surfaces unless specified or shown otherwise.
- B. In accordance with NAAMM Metal Finishes Manual AMP 500, unless otherwise specified.
- C. Finish exposed metal surfaces as follows, unless specified otherwise:
1. Stainless Steel: Finish No. 2B or 2D.
 2. Steel and Galvanized Steel:
 - a. Finish painted under Section 09 91 00, PAINTING unless specified as prefinished item.
 - b. Manufacturer's finish:
 - 1) Baked on prime coat over a phosphate coating.
 - 2) Baked-on prime and finish coat over a phosphate coating.

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- 3) Fluorocarbon Finish: AAMA 621, high performance organic coating.
- 4).Use stainless steel at pipe flashings.

2.7 BASE FLASHING

- A. Fabricate metal base flashing up vertical surfaces not less than 200 mm (8 inch) nor more than 400 mm (16 inch).
- B. Fabricate roof flange not less than 100 mm (4 inches) wide unless shown otherwise. When base flashing length exceeds 2400 mm (8 feet) form flange edge with 13 mm (1/2 inch) hem to receive cleats.
- C. Form base flashing bent from strip except pipe flashing. Fabricate ends for riveted soldered lap seam joints. Fabricate expansion joint ends as specified.
- D. Pipe Flashing: (Other than engine exhaust or flue stack)
 1. Fabricate roof flange not less than 100 mm (4 inches) beyond sleeve on all sides.
 2. Extend sleeve up and around pipe and flange out at bottom not less than 13 mm (1/2 inch) and solder to flange and sleeve seam to make watertight.
 3. At low pipes 200 mm (8 inch) to 450 mm (18 inch) above roof:
 - a. Form top of sleeve to turn down into the pipe at least 25 mm (one inch).
 - b. Allow for loose fit around and into the pipe.
 4. At high pipes and pipes with goosenecks or other obstructions which would prevent turning the flashing down into the pipe:
 - a. Extend sleeve up not less than 300 mm (12 inch) above roofing.
 - b. Allow for loose fit around pipe.

2.8 COUNTERFLASHING (CAP FLASHING OR HOODS)

- A. Terne-coated or Galvanized steel, unless specified otherwise.
- B. Fabricate to lap base flashing a minimum of 100 mm (4 inches) with drip:
 1. Form lock seams for outside corners. Allow for lap joints at ends and inside corners.
 2. In general, form flashing in lengths not less than 2400 mm (8 feet) and not more than 3000 mm (10 feet).
 3. Two-piece, lock in type flashing may be used in-lieu-of one piece counter-flashing.
 4. Manufactured assemblies may be used.
 5. Where counterflashing is installed at new work use an integral flange at the top designed to be extended into the masonry joint or reglet in concrete.
 6. Where counterflashing is installed at existing work use surface applied type, formed to provide a space for the application of sealant at the top edge.
- C. One-piece Counterflashing:
 1. Back edge turned up and fabricate to lock into reglet in concrete.
 2. Upper edge formed to extend full depth of masonry unit in mortar joint with back edge turned up 6 mm (1/4 inch).
- D. Two-Piece Counterflashing:
 1. Receiver to extend into masonry wall depth of masonry unit with back edge turned up 6 mm (1/4 inch) and exposed edge designed to receive and lock counterflashing upper edge when inserted.
 2. Counterflashing upper edge designed to snap lock into receiver.
- E. Surface Mounted Counterflashing; one or two piece:

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1. Use at existing or new surfaces where flashing can not be inserted in vertical surface.
 2. One piece fabricate upper edge folded double for 65 mm (2 1/2 inches) with top 19 mm (3/4 inch) bent out to form "V" joint sealant pocket with vertical surface. Perforate flat double area against vertical surface with horizontally slotted fastener holes at 400 mm (16 inch) centers between end holes. Option: One piece surface mounted counter-flashing (cap flashing) may be used. Fabricate as detailed on Plate 51 of SMACNA Architectural Sheet Metal Manual.
 3. Two pieces: Fabricate upper edge to lock into surface mounted receiver. Fabricate receiver joint sealant pocket on upper edge and lower edge to receive counterflashing, with slotted fastener holes at 400 mm (16 inch) centers between upper and lower edge.
- F. Pipe Counterflashing:
1. Form flashing for water-tight umbrella with upper portion against pipe to receive a draw band and upper edge to form a "V" joint sealant receiver approximately 19 mm (3/4 inch) deep.
 2. Fabricate 100 mm (4 inch) over lap at end.
 3. Fabricate draw band of same metal as counter flashing. Use 0.33 mm (0.013 inch) thick stainless steel.
 4. Use stainless steel bolt on draw band tightening assembly.
 5. Vent pipe counter flashing may be fabricated to omit draw band and turn down 25 mm (one inch) inside vent pipe.
- G. Where vented edge decks intersect vertical surfaces, form in one piece, shape to slope down to a point level with and in front of edge-set notched plank; then, down vertically, overlapping base flashing.

2.11 HANGING GUTTERS

- A. Fabricate gutters of not less than the following:
1. 24 gauge terne-coated or galvanized steel.
- B. Fabricate hanging gutters in sections not less than 2400 mm (8 feet) long, except at ends of runs where shorter lengths are required. Gutter profile to match existing including folding the outside edge for rigidity.
- C. Building side of gutter to match existing height and profile.
- D. Gutter Bead: Stiffen outer edge of gutter by folding edge over to match existing profile..
- E. Gutter Spacers:
1. Fabricate of same material and thickness as gutter.
 2. Fabricate 25 mm (one inch) wide strap and fasten to gutters not over 900 mm (36 inches) on center.
 3. Turn back edge up 25 mm (one inch) and lap front edge over gutter bead.
 4. Rivet and solder to gutter except rivet and seal to aluminum.
- F. Outlet Tubes:
1. Form outlet tubes to connect gutters to conductors of same metal and thickness as gutters extend into the conductor 75 mm (3 inch). Flange upper end of outlet tube 13 mm (1/2 inch).
 2. Lock and solder longitudinal seam
 3. Solder tube to gutter.
 4. Fabricate basket strainers of same material as gutters.
- G. Tie Into Existing Gutter System.
1. Tie new gutter system with existing gutter system at a location where existing gutter system is unacceptable condition to but the new and existing pieces together and solder the joint.

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2. Joint to be ground smooth so as not to impede water flow.

2.12 CONDUCTORS (DOWNSPOUTS)

- A. Fabricate conductors of same metal and thickness as gutters in sections approximately 3000 mm (10 feet) long [with 19 mm (3/4 inch) wide flat locked seams].
 - 1. Fabricate open face channel shape with hemmed longitudinal edges.
- B. Fabricate elbows by mitering, riveting, and soldering. Lap upper section to the inside of the lower piece.
- C. Fabricate conductor brackets or hangers of same material as conductor, 2 mm (1/16 inch) thick by 25 mm (one inch) minimum width. Form to support conductors 25 mm (one inch) from wall surface in accordance with Architectural Sheet Metal Manual Plate 34, Design C for rectangular shapes and E for round shapes.
- D. Conductor Heads:
 - 1. Fabricate of same material as conductor.
 - 2. Fabricate conductor heads to not less than 250 mm (10 inch) wide by 200 mm (8 inch) deep by 200 mm (8 inches) from front to back.
 - 3. Form front and side edges channel shape not less than 13 mm (1/2 inch) wide flanges with edge hemmed.
 - 4. Slope bottom to sleeve to conductor or downspout at not less than 60 degree angle.
 - 5. Extend wall edge not less than 25 mm (one inch) above front edge.
 - 6. Solder joints for water tight assembly.
 - 7. Fabricate outlet tube or sleeve at bottom not less than 50 mm (2 inches) long to insert into conductor.

2.13 SPLASHPANS

- A. Fabricate splashpans from the following:
 - 2. 0.4 mm (0.015 inch) thick stainless steel.
- B. Fabricate in accordance with Architectural Sheet Metal Manual Plate 35 with not less than two ribs as shown in alternate section.

2.14 REGLETS

- A. Fabricate reglets of one of the following materials:
 - 2. Stainless steel, not less than 0.3 mm (0.012 inch) thick.
- B. Fill open-type reglets with fiberboard or other suitable separator, to prevent crushing of the slot during installation.
- C. Bend edges of reglets for setting into concrete to an angle of not less than 45 degrees, and make wide enough to provide firm anchorage in the concrete.
- D. Fabricate reglets for building into horizontal masonry mortar joints not less than 19 mm (3/4 inch) deep, nor more than 25 mm (one inch) deep.
- E. Fabricate mitered corners, fittings, and special shapes as may be required by details.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Do not saw cut masonry for a parallel flashing.
2. materials and profiles to be approved by Owner's Representative before proceeding.
3. Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, ARCHITECTURAL SHEET METAL MANUAL, except as otherwise shown or specified.
4. Apply Sealant as specified in Section 07 92 00, JOINT SEALANTS.
5. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application.
6. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate. Cover holes or cracks in wood wider than 6 mm (1/4 inch) with sheet metal compatible with the roofing and flashing material used.
7. Coordinate with masonry work for the application of a skim coat of mortar to surfaces of unit masonry to receive flashing material before the application of flashing.
8. Apply a layer of 7 Kg (15 pound) saturated felt followed by a layer of rosin paper to wood surfaces to be covered with copper. Lap each ply 50 mm (2 inch) with the slope and nail with large headed copper nails.
9. Confine direct nailing of sheet metal to strips 300 mm (12 inch) or less wide. Nail flashing along one edge only. Space nail not over 100 mm (4 inches) on center unless specified otherwise.
10. Install bolts, rivets, and screws where indicated, specified, or required in accordance with the SMACNA Sheet Metal Manual. Space rivets at 75 mm (3 inch) on centers in two rows in a staggered position. Use neoprene washers under fastener heads when fastener head is exposed.
11. Coordinate with roofing work for the installation of metal base flashings and other metal items having roof flanges for anchorage and watertight installation.
12. Nail continuous cleats on 75 mm (3 inch) on centers in two rows in a staggered position.
13. Nail individual cleats with two nails and bend end tab over nail heads. Lock other end of cleat into hemmed edge.
14. Install flashings in conjunction with other trades so that flashings are inserted in other materials and joined together to provide a water tight installation.
15. Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.
16. Bitumen Stops:
 - a. Install bitumen stops for built-up roof opening penetrations through deck and at formed sheet metal gravel stops.

- b. Nail leg of bitumen stop at 300 mm (12 inch) intervals to nailing strip at roof edge before roofing material is installed.
- B. Flashing at Masonry, Stone, or Precast Concrete Copings:
 - 1. Install flashing with drips on both wall faces unless shown otherwise.
 - 2. Form penetration openings to fit tight against dowel or other item with edge turned up. Seal penetrations with sealant.

3.3 BASE FLASHING

- A. Install where roof membrane type base flashing is not used and where shown.
 - 1. Install flashing at intersections of roofs with vertical surfaces or at penetrations through roofs, to provide watertight construction.
 - 2. Install metal flashings and accessories having flanges extending out on top of the built-up roofing before final bituminous coat and roof aggregate is applied.
 - 3. Set flanges in heavy trowel coat of roof cement and nail through flanges into wood nailers over bituminous roofing.
 - 4. Secure flange by nailing through roofing into wood blocking with nails spaced 75 mm (3 inch) on centers or, when flange over 100 mm (4 inch) wide terminate in a 13 mm (1/2 inch) folded edge anchored with cleats spaced 200 mm (8 inch) on center. Secure one end of cleat over nail heads. Lock other end into the seam.
- B. For long runs of base flashings install in lengths of not less than 2400 mm (8 feet) nor more than 3000 mm (ten feet). Install a 75 mm (3 inch) wide slip type, loose lock expansion joint filled with sealant in joints of base flashing sections over 2400 mm (8 feet) in length. Lock and solder corner joints at corners.
- C. Extend base flashing up under counter flashing of roof specialties and accessories or equipment not less than 75 mm (3 inch).

3.4 COUNTERFLASHING (CAP FLASHING OR HOODS)

- A. General:
 - 1. Install counterflashing over and in conjunction with installation of base flashings, except as otherwise specified or shown.
 - 2. Install counterflashing to lap base flashings not less than 100 mm (4 inch).
 - 3. Install upper edge or top of counterflashing not less than 225 mm (9 inch) above top of the roofing.
 - 4. Lap joints not less than 100 mm (4 inch). Stagger joints with relation to metal base flashing joints.
 - 5. Use surface applied counterflashing on existing surfaces and new work where not possible to integrate into item.
 - 6. When fastening to concrete or masonry, use screws driven in expansion shields set in concrete or masonry. Use screws to wood and sheet metal. Set fasteners in mortar joints of masonry work.
- B. One Piece Counterflashing:
 - 1. Where flashing is installed at new masonry, coordinate to insure proper height, embed in mortar, and end lap.
 - 2. Where flashing is installed in reglet in concrete insert upper edge into reglet. Hold flashing in place with lead wedges spaced not more than 200 mm (8 inch) apart. Fill joint with sealant.
 - 3. Where flashing is surface mounted on flat surfaces.

- a. When top edge is double folded anchor flat portion below sealant "V" joint with fasteners spaced not over 400 mm (16 inch) on center:
 - 1) Locate fasteners in masonry mortar joints.
 - 2) Use screws to sheet metal or wood.
- b. Fill joint at top with sealant.
4. Where flashing or hood is mounted on pipe.
 - a. Secure with draw band tight against pipe.
 - b. Set hood and secure to pipe with a one by 25 mm x 3 mm (1 x 1/8 inch) bolt on stainless steel draw band type clamp, or a stainless worm gear type clamp.
 - c. Completely fill joint at top with sealant.
- C. Two-Piece Counterflashing:
 1. Where receiver is installed at new masonry coordinate to insure proper height, embed in mortar, and lap.
 2. Surface applied type receiver:
 - a. Secure to face construction in accordance, with manufacturers instructions.
 - b. Completely fill space at the top edge of receiver with sealant.
 3. Insert counter flashing in receiver in accordance with fabricator or manufacturer's instructions and to fit tight against base flashing.
- D. Where vented edge occur install so lower edge of counterflashing is against base flashing.
- E. When counter flashing is a component of other flashing install as shown.

3.5 REGLETS

- A. Install reglets in a manner to provide a watertight installation.
- B. Locate reglets not less than 225 mm (9 inch) nor more than 400 mm (16 inch) above roofing, and not less than 125 mm (5 inch) nor more than 325 mm (13 inch) above cant strip.
- C. Butt and align end joints on each section of reglet and securely hold in position until concrete or mortar are hardened:
 1. Coordinate reglets for anchorage into concrete with formwork construction.
 2. Coordinate reglets for masonry to locate horizontally into mortar joints.

3.10 INTEGRAL GUTTERS

- A. Pitch gutters so high points equidistant from downspouts. Slope to match existing slope.
- B. Lap joints, except for expansion joints, at least 25 mm (one inch) in the direction of flow. Solder lapped joints.
 1. Use brass or stainless steel screws.
- C. Secure brackets to gutters in such a manner as to allow free movement of gutter due to expansion and contraction.
- D. Gutter Expansion Joint:
 1. Locate expansion joints midway between outlet tubes.
 2. Provide at least a 25 mm (one inch) expansion joint space between end baffles of gutters.
 3. Install a cover plate over the space at expansion joint.
 4. Fasten cover plates to gutter section on one side of expansion joint only.

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5. Secure loose end of cover plate to gutter section on other side of expansion joint by a loose-locked slip joint.
- E. Outlet Tubes: Set bracket strainers loosely into gutter outlet tubes.

3.11 CONDUCTORS (DOWNSPOUTS)

- A. Where scuppers discharge into downspouts install conductor head to receive discharge with back edge up behind drip edge of scupper. Fasten and seal joint. Sleeve conductors to gutter outlet tubes and fasten joint and joints between sections.
- B. Set conductors plumb and clear of wall, and anchor to wall with two anchor straps, located near top and bottom of each section of conductor. Strap at top shall be fixed to downspout, intermediate straps and strap at bottom shall be slotted to allow not less than 13 mm (1/2 inch) movement for each 3000 mm (10 feet) of downspout.
- C. Install elbows, offsets and shoes where shown and required. Slope not less than 45 degrees.

3.12 SPLASH PANS

- A. Install where downspouts discharge on low slope roofs unless shown otherwise.

- - - E N D - - -

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION:

Section covers all sealant and caulking materials and their application, wherever required for complete installation of building materials or systems.

1.3 QUALITY CONTROL:

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Obtain test results from a qualified testing agency based on testing current sealant formulations within a 12-month period.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021.
 - 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C920, and where applicable, to other standard test methods.
 - 3. Test elastomeric joint sealants according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C920 for adhesion and cohesion under cyclic movement, adhesion-in peel, and indentation hardness.
 - 4. Test other joint sealants for compliance with requirements indicated by referencing standard specifications and test methods.
- D. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to joint substrates in accordance with sealant manufacturer's recommendations:
 - 1. Locate test joints where indicated or, if not indicated, as directed by Contracting Officer.
 - 2. Conduct field tests for each application indicated below:
 - a. Each type of elastomeric sealant and joint substrate indicated.

- b. Each type of non-elastomeric sealant and joint substrate indicated.
- 3. Notify Owner's Representative seven days in advance of dates and times when test joints will be erected.
- 4. Arrange for tests to take place with joint sealant manufacturer's technical representative present.
- E. VOC: Acrylic latex and Silicon sealants shall have less than 50g/l VOC content.
- F. Mockups: Before installing joint sealants, apply elastomeric sealants as follows to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this section.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's installation instructions for each product used.
- C. Cured samples of exposed sealants for each color where required to match adjacent material.
- D. Manufacturer's Literature and Data:
 - 1. Caulking compound
 - 2. Primers
 - 3. Sealing compound, each type, including compatibility when different sealants are in contact with each other.

1.5 PROJECT CONDITIONS:

- A. Environmental Limitations:
 - 1. Do not proceed with installation of joint sealants under following conditions:
 - a. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 °C (40 °F).
 - b. When joint substrates are wet.
- B. Joint-Width Conditions:
 - 1. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

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C. Joint-Substrate Conditions:

1. Do not proceed with installation of joint sealants until
contaminants capable of interfering with adhesion are removed from
joint substrates.

1.6 DELIVERY, HANDLING, AND STORAGE:

- A. Deliver materials in manufacturers' original unopened containers, with
brand names, date of manufacture, shelf life, and material designation
clearly marked thereon.
- B. Carefully handle and store to prevent inclusion of foreign materials.
- C. Do not subject to sustained temperatures exceeding 32° C (90° F) or less
than 5° C (40° F).

1.7 DEFINITIONS:

- A. Definitions of terms in accordance with ASTM C717 and as specified.
- B. Back-up Rod: A type of sealant backing.
- C. Bond Breakers: A type of sealant backing.
- D. Filler: A sealant backing used behind a back-up rod.

1.8 WARRANTY:

- A. Warranty exterior sealing against leaks, adhesion, and cohesive
failure, and subject to terms of "Warranty of Construction", FAR clause
52.246-21, except that warranty period shall be extended to two years.
- B. General Warranty: Special warranty specified in this Article shall not
deprive Government of other rights Government may have under other
provisions of Contract Documents and shall be in addition to, and run
concurrent with, other warranties made by Contractor under requirements
of Contract Documents.

1.9 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent
referenced. Publications are referenced in text by basic designation
only.
- B. American Society for Testing and Materials (ASTM):
C509-06.....Elastomeric Cellular Preformed Gasket and
Sealing Material.
C612-10.....Mineral Fiber Block and Board Thermal
Insulation.
C717-10.....Standard Terminology of Building Seals and
Sealants.
C834-10.....Latex Sealants.

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C919-08.....Use of Sealants in Acoustical Applications.

C920-10.....Elastomeric Joint Sealants.

C1021-08.....Laboratories Engaged in Testing of Building
Sealants.

C1193-09.....Standard Guide for Use of Joint Sealants.

C1330-02 (R2007).....Cylindrical Sealant Backing for Use with Cold
Liquid Applied Sealants.

D1056-07.....Specification for Flexible Cellular Materials—
Sponge or Expanded Rubber.

E84-09.....Surface Burning Characteristics of Building
Materials.

C. Sealant, Waterproofing and Restoration Institute (SWRI).
The Professionals' Guide

PART 2 - PRODUCTS

2.1 SEALANTS:

A. S-1:

1. ASTM C920, Polyurethane or Polyether Hybrid Sealant.
2. Type S.
3. Class 25, joint movement range of plus or minus 25 percent or greater.
4. Grade NS.
5. Shore A hardness of 20-40.

2.3 COLOR:

- A. Sealants used with exposed masonry shall match color of mortar joints.
- B. Sealants used with unpainted concrete shall match color of adjacent concrete.
- C. Color of sealants for other locations shall be light gray or aluminum, unless specified otherwise.

2.4 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 1. Type C: Closed-cell material with a surface skin.

- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 32° C (minus 26° F). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.5 FILLER:

- A. Mineral fiber board: ASTM C612, Class 1.
- B. Thickness same as joint width.
- C. Depth to fill void completely behind back-up rod.

2.6 PRIMER:

- A. As recommended by manufacturer of caulking or sealant material.
- B. Stain free type.

2.7 CLEANERS-NON POUROUS SURFACES:

Chemical cleaners acceptable to manufacturer of sealants and sealant backing material, free of oily residues and other substances capable of staining or harming joint substrates and adjacent non-porous surfaces and formulated to promote adhesion of sealant and substrates.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.
- B. Coordinate for repair and resolution of unsound substrate materials.
- C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

3.2 PREPARATIONS:

- A. Prepare joints in accordance with manufacturer's instructions and SWRI.
- B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer paint, or other foreign matter that would tend to destroy or impair adhesion.

1. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.
2. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- C. Do not cut or damage joint edges.
- D. Apply masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Apply primer to sides of joints wherever required by compound manufacturer's printed instructions.
 1. Apply primer prior to installation of back-up rod or bond breaker tape.
 2. Use brush or other approved means that will reach all parts of joints.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

3.3 BACKING INSTALLATION:

- A. Install back-up material, to form joints enclosed on three sides as required for specified depth of sealant.
- B. Where deep joints occur, install filler to fill space behind the back-up rod and position the rod at proper depth.

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- C. Cut fillers installed by others to proper depth for installation of back-up rod and sealants.
- D. Install back-up rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm (1/8 inch) for sealant depths specified.
- E. Where space for back-up rod does not exist, install bond breaker tape strip at bottom (or back) of joint so sealant bonds only to two opposing surfaces.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

3.4 SEALANT DEPTHS AND GEOMETRY:

- A. At widths up to 6 mm (1/4 inch), sealant depth equal to width.
- B. At widths over 6 mm (1/4 inch), sealant depth 1/2 of width up to 13 mm (1/2 inch) maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

3.5 INSTALLATION:

- A. General:
 - 1. Apply sealants and caulking only when ambient temperature is between 5° C and 38° C (40° and 100° F).
 - 2. Do not use polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
 - 3. Do not use sealant type listed by manufacture as not suitable for use in locations specified.
 - 4. Apply caulking and sealing compound in accordance with manufacturer's printed instructions.
 - 5. Avoid dropping or smearing compound on adjacent surfaces.
 - 6. Fill joints solidly with compound and finish compound smooth.
 - 7. Tool joints to concave surface unless shown or specified otherwise.
 - 8. Finish paving or floor joints flush unless joint is otherwise detailed.
 - 9. Apply compounds with nozzle size to fit joint width.
 - 10. Test sealants for compatibility with each other and substrate. Use only compatible sealant.
- B. For application of sealants, follow requirements of ASTM C1193 unless specified otherwise.
- C. Where gypsum board partitions are of sound rated, fire rated, or smoke barrier construction, follow requirements of ASTM C919 only to seal all

cut-outs and intersections with the adjoining construction unless specified otherwise.

1. Apply a 6 mm (1/4 inch) minimum bead of sealant each side of runners (tracks), including those used at partition intersections with dissimilar wall construction.
2. Coordinate with application of gypsum board to install sealant immediately prior to application of gypsum board.
3. Partition intersections: Seal edges of face layer of gypsum board abutting intersecting partitions, before taping and finishing or application of veneer plaster-joint reinforcing.
4. Openings: Apply a 6 mm (1/4 inch) bead of sealant around all cut-outs to seal openings of electrical boxes, ducts, pipes and similar penetrations. To seal electrical boxes, seal sides and backs.
5. Control Joints: Before control joints are installed, apply sealant in back of control joint to reduce flanking path for sound through control joint.

3.6 FIELD QUALITY CONTROL:

A. Field-Adhesion Testing: Field-test joint-sealant adhesion to joint substrates as recommended by sealant manufacturer:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform 10 tests for first 300 m (1000 feet) of joint length for each type of elastomeric sealant and joint substrate.
 - b. Perform one test for each 300 m (1000 feet) of joint length thereafter or one test per each floor per elevation.

B. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field adhesion test log.

C. Inspect tested joints and report on following:

1. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
2. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
3. Whether sealants filled joint cavities and are free from voids.
4. Whether sealant dimensions and configurations comply with specified requirements.

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- D. Record test results in a field adhesion test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
- E. Repair sealants pulled from test area by applying new sealants following same procedures used to originally seal joints. Ensure that original sealant surfaces are clean and new sealant contacts original sealant.
- F. Evaluation of Field-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements, will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.7 CLEANING:

- A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by the caulking or sealant manufacturer.
- B. After filling and finishing joints, remove masking tape.
- C. Leave adjacent surfaces in a clean and unstained condition.

3.8 LOCATIONS:

- A. Exterior Building Joints, Horizontal and Vertical:
 - 1. Metal to Metal: Type S-1
 - 2. Metal to Masonry or Stone: Type S-1
 - 3. Masonry to Masonry or Stone: Type S-1
 - 4. Stone to Stone: Type S-1
 - 5. Cast Stone to Cast Stone: Type S-1
 - 8. Wood to Masonry: Type S-1
- B. Metal Reglets and Flashings:
 - 1. Flashings to Wall: Type S-1
 - 2. Metal to Metal: Type S-1

- - - E N D - - -

SECTION 09 26 00
 veneer PLASTERING

PART 1 GENERAL

1.1 DESCRIPTION

This section specifies veneer plaster and veneer plaster base.

1.2 RELATED WORK

A. Application of sealants: Section 07 92 00, JOINT SEALANTS.

1.3 TERMINOLOGY

- A. Definitions and description of terms in accordance with ASTM C11, C843, C844, and as specified.
- B. Underside of Structure Overhead: Where wood trusses or joists are shown, the underside of structure overhead is the underside of the floor or roof construction supported by the trusses or joists.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Gypsum veneer plaster.
 - 2. Gypsum Base for Veneer Plaster.
 - 3. Accessories.
 - 4. Joint reinforcing materials.
 - 5. Laminating adhesive.
- C. Shop Drawings:

Typical veneer plaster installation, showing corner details, casing details, and other similar details.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C11-10.....Terminology Relating to Gypsum and Related Building Materials and Systems
 - C472-99(R2009).....Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
 - C475-02(R2007).....Joint Compound and Joint Tape for Finish Gypsum Board Construction
 - C587-04(R2009).....Gypsum Veneer Plaster
 - C1396-04.....Specification Gypsum Board
 - C631-09.....Bonding Compounds for Interior Plastering
 - C843-99(R2006).....Application of Gypsum Veneer Plaster

C844-04(R2010).....Application of Gypsum Base to Receive Gypsum
Veneer Plaster
C954-10.....Steel Drill Screws for the Application of Gypsum
Panel Products Board or Metal Plaster Bases to
Steel Studs from 0.033 in. (0.84mm) to 0.112 in.
(2.84mm) in thickness
C1002-07.....Steel Drill Screws for the Applications of
Gypsum Panel Products Board or Metal Plaster
Bases
C1047-10.....Accessories for Gypsum Wallboard and Gypsum
Veneer Base
D3678-97(R2008).....Rigid Poly (Vinyl Chloride) (PVC) Interior-
Profile Extrusions

PART 2 - PRODUCTS

2.1 VENEER BASE

ASTM C1396, plain, Type "X", 16 mm (5/8-inch) thick.

2.2 GYPSUM VENEER PLASTER

ASTM C587. // Minimum compressive strength of finish coat plaster shall
be 17.2 MPa (2500 psi) in accordance with ASTM C472.//

2.3 ACCESSORIES

- A. Corner Bead, Edge Trim and Control Joints: ASTM C1047 or D3678, except
as specified.
- B. Corner bead and edge trim (casings): Minimum 0.38 mm (0.015-inch) thick
zinc-coated steel sheet or rigid PVC plaster.
- C. Flanges not less than 22 mm (7/8-inch) wide with punch-outs or
deformations as required to provide plaster bond.

2.4 JOINT REINFORCING TAPE

ASTM C475, Paper tape.

2.5 LAMINATING ADHESIVE

ASTM C475 joint compound chemical setting type or as recommended by
veneer base manufacturer. VOC not to exceed 20g/l; free of antifreeze
and pesticides.

2.6 FASTENERS

- A. Screws: ASTM C1002 or C954.
- B. Staples: Flattened zinc-coated steel wire, minimum 15 mm (9/16-inch) leg
for securing corner beads or casing and minimum 9 mm (3/8-inch) leg for
securing joint reinforcement.

2.7 BONDING COMPOUND

ASTM C631.

PART 3 EXECUTION

SPEC WRITER NOTE:

3.1 INSTALLATION CRITERIA

- A. Where fire rated construction is required for walls, partitions, columns, beams and floor-ceiling assemblies, construct the same as that used in fire rating test.
- B. Requirements for fire rated and sound rated assemblies and materials: Construct as shown and specified; the provisions of the Scope Paragraphs 1.2 and 1.3 of ASTM C843 and 1.2, 1.3, and 1.4 of ASTM C844 regarding details of construction shall not apply.
- C. Requirements for ventilating unheated spaces above veneer plaster ceilings: Construct as shown and specified; the provisions of the Scope Paragraph 1.5 of ASTM C844 regarding ventilation shall not apply.

3.2 SEALANT APPLICATION

- A. Apply sealants to veneer plaster base to cut outs, penetrations, and intersections with adjoining materials prior to application of veneer plaster for acoustical partitions.
- B. Coordinate with Section 07 92 00, JOINT SEALANTS, for application of sealants.

3.3 VENEER PLASTER APPLICATION OVER GYPSUM BASE

- A. Mix and apply veneer plaster in accordance with ASTM C843 for one-component plasters, except as specified otherwise.
- B. Joint Reinforcement: ASTM C843.
- C. Apply smooth-trowel finish.
- D. Seal and reinforce all joints and fastener heads above ceilings.

3.5 CLEANUP AND PATCHING

Remove any plaster splashes from adjacent surfaces. Repair defects in veneer plaster. Plaster surfaces shall be smooth, clean, and in condition to receive the finishing materials that will be applied.

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SECTION 09 29 00
GYPSUM BOARD

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies installation and finishing of gypsum board.

1.2 RELATED WORK

A. Gypsum base for veneer plaster: Section 09 26 00, VENEER PLASTERING.

1.3 TERMINOLOGY

- A. Definitions and description of terms shall be in accordance with ASTM C11, C840, and as specified.
- B. Underside of Structure Overhead: In spaces where wood trusses or joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by the trusses or joists.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Cornerbead and edge trim.
 - 2. Finishing materials.
 - 3. Laminating adhesive.
 - 4. Gypsum board, each type.
- C. Shop Drawings:
 - 1. Typical gypsum board installation, showing corner details, edge trim details and the like.
- D. Samples:
 - 1. Cornerbead.
 - 2. Edge trim.

1.5 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

In accordance with the requirements of ASTM C840.

1.6 ENVIRONMENTAL CONDITIONS

In accordance with the requirements of ASTM C840.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing And Materials (ASTM):

- C11-08.....Terminology Relating to Gypsum and Related
Building Materials and Systems
 - C475-02.....Joint Compound and Joint Tape for Finishing
Gypsum Board
 - C840-08.....Application and Finishing of Gypsum Board
 - C919-08.....Sealants in Acoustical Applications
 - C954-07.....Steel Drill Screws for the Application of Gypsum
Board or Metal Plaster Bases to Steel Stud from
0.033 in. (0.84mm) to 0.112 in. (2.84mm) in
thickness
 - C1002-07.....Steel Self-Piercing Tapping Screws for the
Application of Gypsum Panel Products or Metal
Plaster Bases to Wood Studs or Steel Studs
 - C1047-05.....Accessories for Gypsum Wallboard and Gypsum
Veneer Base
 - C1177-06.....Glass Mat Gypsum Substrate for Use as Sheathing
 - C1658-06.....Glass Mat Gypsum Panels
 - C1396-06.....Gypsum Board
 - E84-08.....Surface Burning Characteristics of Building
Materials
- C. Underwriters Laboratories Inc. (UL):
Latest Edition.....Fire Resistance Directory
- D. Inchcape Testing Services (ITS):
Latest Editions.....Certification Listings

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

- A. Gypsum Board: ASTM C1396, Type X, 16 mm (5/8 inch) thick unless shown otherwise.
- B. Coreboard or Shaft Wall Liner Panels.
 - 1. ASTM C1396, Type X.
- C. Gypsum cores shall contain a minimum of 95 percent post industrial recycled gypsum content. Paper facings shall contain 100 percent post-consumer recycled paper content.

2.2 ACCESSORIES

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet or rigid PVC plastic.

- B. Flanges not less than 22 mm (7/8 inch) wide with punchouts or deformations as required to provide compound bond.

2.3 FASTENERS

- A. ASTM C1002 and ASTM C840, except as otherwise specified.
- B. ASTM C954, for steel studs thicker than 0.04 mm (0.33 inch).
- C. Select screws of size and type recommended by the manufacturer of the material being fastened.
- D. For fire rated construction, type and size same as used in fire rating test.
- E. Clips: Zinc-coated (galvanized) steel; gypsum board manufacturer's standard items.

2.4 FINISHING MATERIALS AND LAMINATING ADHESIVE

ASTM C475 and ASTM C840. Free of antifreeze, vinyl adhesives, preservatives, biocides and other VOC. Adhesive shall contain a maximum VOC content of 50 g/l.

PART 3 - EXECUTION

3.1 INSTALLING GYPSUM BOARD

- A. Coordinate installation of gypsum board with other trades and related work.
- B. Install gypsum board in accordance with ASTM C840, except as otherwise specified.
- D. Use gypsum boards in maximum practical lengths to minimize number of end joints.
- E. Bring gypsum board into contact, but do not force into place.
- F. Ceilings:
 - 1. For single-ply construction, use perpendicular application.
 - 2. For two-ply assemblies:
 - a. Use perpendicular application.
 - b. Apply face ply of gypsum board so that joints of face ply do not occur at joints of base ply with joints over framing members.
- G. Electrical and Telecommunications Boxes:
 - 1. Seal annular spaces between electrical and telecommunications receptacle boxes and gypsum board partitions.
- H. Accessories
 - 1. Set accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified.
 - 2. Install in one piece, without the limits of the longest commercially available lengths.

3. Corner Beads:

- a. Install at all vertical and horizontal external corners and where shown.
 - b. Use screws only. Do not use crimping tool.
4. Edge Trim (casings Beads):
- a. At both sides of expansion and control joints unless shown otherwise.
 - b. Where gypsum board terminates against dissimilar materials and at perimeter of openings, except where covered by flanges, casings or permanently built-in equipment.
 - c. Where gypsum board surfaces of non-load bearing assemblies abut load bearing members.
 - d. Where shown.

3.3 INSTALLING GYPSUM SHEATHING

- A. Install in accordance with ASTM C840, except as otherwise specified or shown.
- B. Use screws of sufficient length to secure sheathing to framing.
- C. Space screws 9 mm (3/8 inch) from ends and edges of sheathing and 200 mm (8 inches) on center. Space screws a maximum of 200 mm (8 inches) on center on intermediate framing members.
- D. Apply 600 mm by 2400 mm (2 foot by 8 foot) sheathing boards horizontally with tongue edge up.

3.5 FINISHING OF GYPSUM BOARD

- A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840. Use Level 4 finish for all finished areas open to public view.
- B. Before proceeding with installation of finishing materials, assure the following:
 1. Gypsum board is fastened and held close to framing or furring.
 2. Fastening heads in gypsum board are slightly below surface in dimple formed by driving tool.
- C. Finish joints, fasteners, and all openings, including openings around penetrations, on that part of the gypsum board extending above suspended ceilings to seal surface of non decorated gypsum board construction. After the installation of hanger rods, hanger wires, supports, equipment, conduits, piping and similar work, seal remaining openings and maintain the integrity of construction Sanding is not required of non decorated surfaces.

3.6 REPAIRS

- A. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- B. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- C. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with 16 mm (5/8 inch) thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- D. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non decorated surface

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